35-MM SPECIAL ISSUE

POPULAR PHOTOGRAPHY

WORLD'S LEADING PHOTOGRAPHIC MAGAZINE

AUGUST, 1956 • 35 CENTS

REFLEX OR RANGEFINDER—WHICH IS BEST FOR 35?

HOW TO:

use lenses correctly

get sharper pictures

focus without rangefinder

make ideal 35-mm negatives

ORMOND GIGLI

3 NEW 35-MM

P-35-33619-28
UNIVERSITY OF MICROFILMS
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ANN ARBOR MICH

Walter Benser puts new Anscochrome through its paces

On a recent "lens-man's" holiday throughout the United States, top editorial photographer and lecturer Walter Benser gave new, high-speed Anscochrome a real workout. Here are a few of his favorite shots, together with his "unretouched" comments.

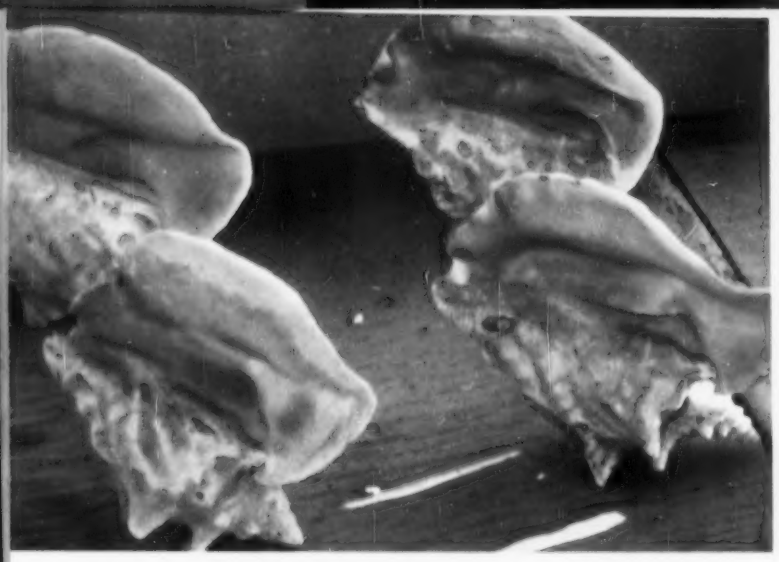
Walter Benser took these pictures in a way that *really* put new Anscochrome to the test! No special equipment. No trick lighting. No reflectors. No filters. His camera was probably no faster than yours. But *here's* the difference: his film was new, high-speed Anscochrome.

Because Anscochrome is rated at Exposure Index 32 . . . actually *3 times faster* than traditional color films . . . it makes an f3.5 lens every bit as good for color as a super-speed f2.0 with slower films, *even* in dim light.

You can shoot new Anscochrome at high speed, for action. You can shoot it "stopped down" for sharper backgrounds, with no loss of color. You can shoot it on grey days . . . in shadows . . . at dawn and dusk . . . at night . . . and get beautiful, *natural* color.

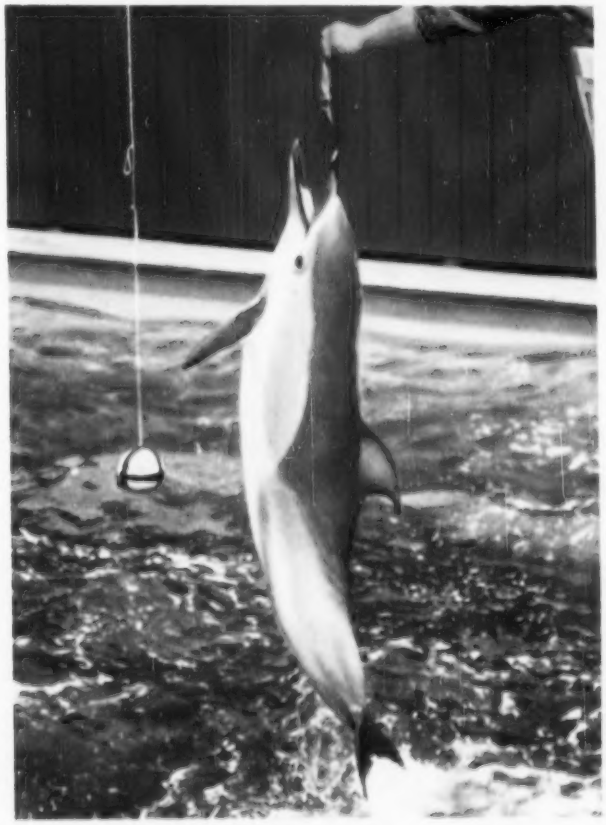
Notice the softer, more natural tones in all of Walter Benser's pictures. Don't they make *you* want to try new Anscochrome . . . first chance you get?

◀ **"Taken at f5.6, exposed for 6 seconds with available light.** Yet what a job Anscochrome did! Note the well-defined outlines . . . the color and detail in important objects . . . and the tremendous depth-of-field."



"Taken late in the afternoon with backlighting. You can almost 'feel' the contrast of shell and wood. Even in shadows, the natural color comes through . . . clear crisp and *natural*. Shot at f8 at 1/50 second."

"Tricky backlighting here, yet the film's speed and latitude not only 'froze' the action, but reproduced every bit of tone and mood. Colors are superb . . . from the frothy white of the breakers to the delicate cool blues . . . and without a filter! Exposure f8 at 1/200 second."



"Shot at f5.6 at 1/250 second. Here again speed, latitude and gradation all made for a fine action shot. In sun or shadow, greens and reds remain true, natural. You get *all* the color . . . just as the eye sees it."

6 good reasons why you'll get better color results with Anscochrome

- **High Speed** . . . rated at 32, which makes it *3 times faster* than traditional color films.
- **Wide Latitude** . . . assures you more natural, balanced color, even in deep shadows, over a wider exposure range.
- **Finer Color** . . . in sun, open shade, and shadows, tones stay true, natural, "alive" . . . no wash-out, no heavying-up, no "far-off" colors.
- **Uniform Gradation** . . . new softer scale gives you more lifelike color in all lighting situations.
- **In Dim Light** . . . transparencies are fully-exposed, with no blacked-out areas . . . no need for a super-speed lens.
- **Indoors** . . . Anscochrome's extra speed and latitude give your flashbulbs far more coverage . . . use blue bulbs with *daylight*-type . . . clear bulbs with *tungsten*-type.

It's a great year for *color* with . . . new *Ansco*chrome *3 times faster* (Exposure Index 32) than traditional films!

Also in 120, 620 and 828 rolls . . . and in bulk in the economical Anscochrome Easy-Loader.

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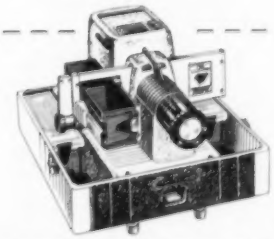
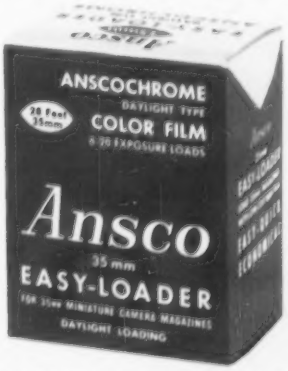


SPECIAL OFFER!

Turn to page 5 for Bell & Howell's special Summer Offer. Here's your chance to own one of America's finest slide projectors . . . and get an Anscochrome Easy-Loader (retail value: $9.95) at a remarkable saving.



Buy a TDC Slide Projector now . .

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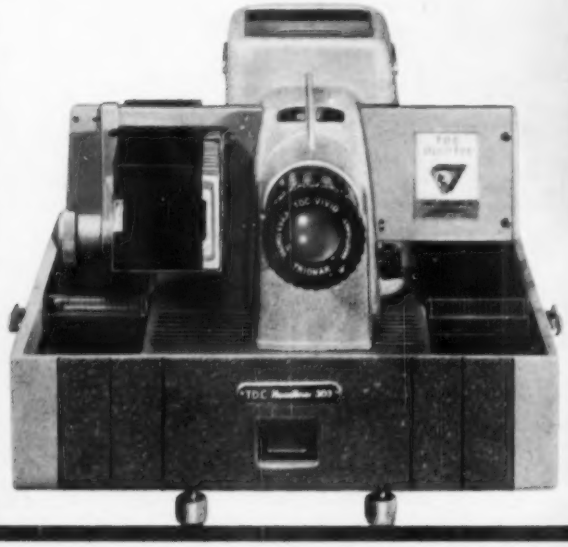
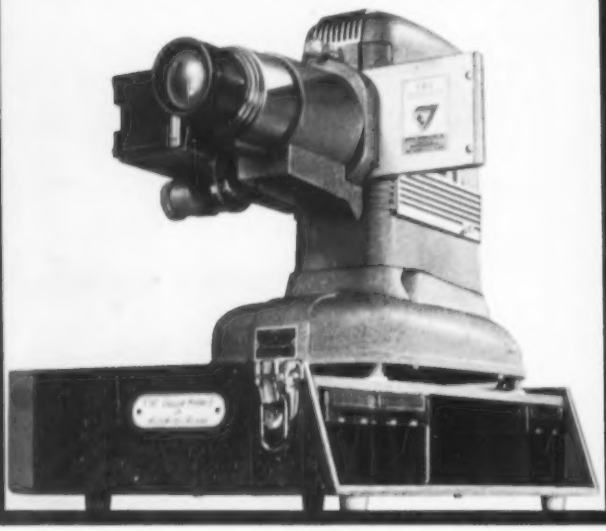
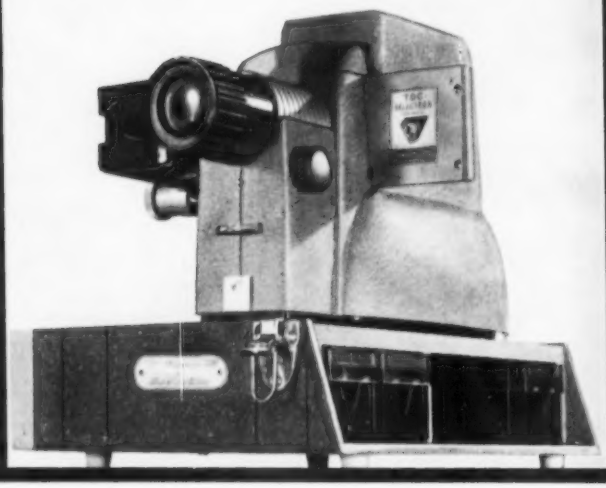
2. TDC HEADLINER 303...**$59.50**



3. TDC DELUXE MODEL D...**$74.75**



4. TDC STREAMLINER 500...**$79.75**



Had your eye on a TDC slide projector? Then now's the time to buy it! During July and August, you can save a *full $12.80* on color film. Just take your pick from Bell & Howell's wide selection of 2" x 2" slide projectors, including the six leaders shown above. (Robomatic model excluded.) **1.** HEADLINER 35. Top value any season. Offers 300 watt brightness and manual changer at this low, low price. $39.95. **2.** HEADLINER 303. Good news you can use. Has tray-loading changer, room for six Selectrays. Price with four Selectrays and case, $59.50. **3.** TDC DELUXE MODEL D. A real cool buy. Wind Tunnel Cooling stops slides from "popping." Complete with case only $74.75. **4.** TDC STREAMLINER 500. Top quality 500-watt model. Has Wind Tunnel Cooling for lamp, optics and slides. A big buy at $79.75. **5.** TDC DELUXE PROJECTOR-VIEW. Lets you show 35mm slides on big viewer glass

. . and Save $12.80 on color film!

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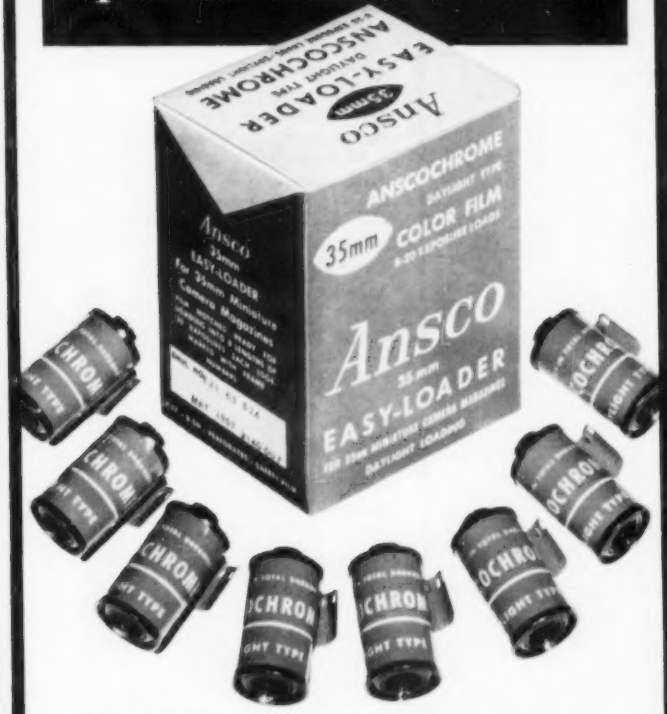

YOURS FOR ONLY $1.95

when you buy a TDC slide projector now. Ansco's Easy-Loader is the new, easy way to load and enjoy the latest in 35mm color film. Equals eight loads of Anscochrome that would cost $14.80 if bought individually. That's enough for 160 slides! And Anscochrome is the new, wide-latitude, extra-speed film that makes color photography easier than ever.

See Ansco ad on pages 2 & 3 of this issue.

5. TDC DELUXE PROJECT-OR-VIEW
$77.50

6. TDC STREAMLINER 500 DUO
$84.50

or project on screen for large groups. $77.50. **6.** TDC STREAMLINER 500 DUO. Famous for versatility. Has both 2" x 2" and 2¼" x 2¼" slide changers; 500-watt lamp. Yours for $84.50. See these, and other popular TDC slide projectors at your dealer's today. Get the full story on Bell & Howell's big Summer Special. *Offer good during July and August only—limited to U.S.A. including Alaska and Hawaii. Bell & Howell, 7106 McCormick Rd., Chicago 45, Ill.*

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POPULAR PHOTOGRAPHY®

including CAMERA and AMERICAN PHOTOGRAPHY

WORLD'S LEADING PHOTOGRAPHIC MAGAZINE

June Thorburn (see cover) was "discovered" at a London party by Ormond Gigli, who suggested that *Life* do a picture story on her. This photograph, part of the assignment, was on Daylight Kodachrome with a Leica IIIf and an 85-mm Nikkor f/2 lens. The exposure, in open shade, was 1/50 second at f/4.5. After the assignment was completed, *Life* decided they couldn't spare a cover and did not use any of the pictures.

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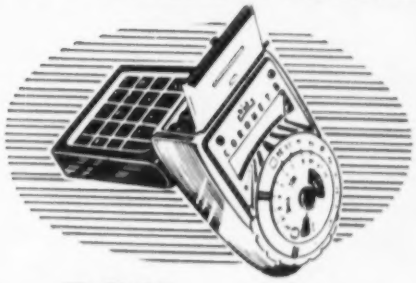

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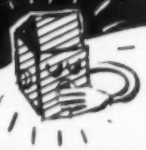

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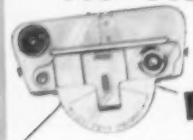

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The Eastman Kodak people tell us that they have had customers with trouble that comes, again, from not reading directions. Or believing what they read. Seems that in the new Ektachrome color developer, people have been getting into trouble because they don't *stir* thoroughly. The first thing you have to add to the water in mixing the first developer is a little bottle of a clear liquid. You may think that just dumping the two together will make them mix, but this isn't so. The clear liquid is sodium hydroxide and an alcohol which is sort of oily, and you really have to do a *thorough* job of mixing to get this into solution. Kodak recommends that even with an electric propeller type of mixer you should stir continually for five to seven minutes!

Since this first solution does not readily oxidize, I suggest that if you are mixing up the new E-2 Ektachrome developer that you use an electric mixer for at least this long. Maybe a blender would help. I use a piece of stainless-steel rod with a propeller on the end which I stick into the chuck of an electric drill. Anyway, just make sure that you whip, beat, stir, shake, mix, agitate, toss, tumble, and churn before adding the other ingredients.

Indoor-Outdoor Film Conversion

I make both movies and still pictures in color. In a recent Kodak publication on movies, they told about using the conversion filters for shooting indoor film out of doors and how convenient it was when you loaded your camera with indoor film that you could just shoot outdoors with the filter. Now I get a copy of Kodak Photo Notes telling me that Daylight film is preferable out of doors. What goes here? Isn't Daylight Kodachrome the same whether it's for movie or still cameras?—K. L. I., St. Paul, Minn.

Basically Kodachrome is the same no matter how it's spooled or sold, but here's the pitch. Movies are shot by the amateur and shown on screens of different color or brightness, and with all kinds of projectors. But the average movie maker is probably not nearly so critical of color correction and rendition as a still photographer—no disparagement intended. The image on the movie screen is moving and changing constantly, the lights and shadows changing and moving as the subject moves. The slide-maker, on the other hand, has a still picture projected for a longer period of time, and it is probably subjected to more critical examination. Now as to using the indoor film outdoors and the outdoor film indoors, I would recommend that you DO NOT use the outdoor film indoors; the heavy filtration necessary cuts the speed way down. The indoor film used outdoors with proper filters however does not require so much filtration, and in most cases the results will be quite satisfactory or adequate. In fact, in certain cases where warmer tones would be more desirable or pleasant, you might prefer the indoor film used with filters outdoors. In aerial photography, for example, it is not as greatly affected by ultraviolet radiations and often produces better results. For *best* results, however, most critical photographers who are after accurate results will use the films recommended by the manufacturer for each specific situation.

Questions of general interest to the color photographer will be answered in this department. However, individual replies can not be given for questions that are not used.—Ed.

EXPOSURE TABLE FOR SUNSETS AND SUNRISES FOR STILL AND MOTION PICTURE CAMERA

	From an hour to 15 minutes before sunset		Sun slightly above horizon—15 minutes before sunset up to sunset		Afterglow in sky up to 15 minutes after sunset	
Film Employed	Direct Sun	Clouds Covering Sun	Direct Sun	Clouds Covering Sun	Light, Open Sky	Dark Clouds in Sky
Kodachrome Film, Daylight Type	1/100 at *f*/16	1/25 at *f*/5.6	1/25 at *f*/5.6	1/25 at *f*/2.8	1/25 to 1/10 at *f*/2	1/10 at *f*/2
Ektachrome Film Daylight Type (Min)	1/200 at *f*/22	1/50 at *f*/8	1/50 at *f*/8	1/25 at *f*/5.6	1/25 to 1/10 at *f*/4	1/25 at *f*/2
16-mm and 8-mm Kodachrome Film, Daylight Type*	*f*/16** ND-2	*f*/8	*f*/5.6	*f*/2.8	*f*/2	*f*/1.9***
Kodacolor Negative Film	1/200 at *f*/16	1/25 at *f*/8	1/25 at *f*/11	1/25 at *f*/5.6	1/10 at *f*/4.5	1/10 at *f*/4.5

*Camera operated at 16 frames per second. For 24 frames per second, use one-half stop larger.

**Neutral Density Filter (Kodak ND-2) should be used over the camera lens.

***From 15 minutes to 30 minutes after sunset, use *f*/1.9 at 8 frames per second.

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In the last 25 years camera design has made significant strides—keeping pace with general photographic progress and the great advances made both in optics and film chemistry. There is no longer a heated contention between the relative merits of the 'small' versus the 'large' negative — or the supposed disadvantages of either.

While all cameras — subminiature, miniature, reflex, roll-film, stereo, sheet film, and others — are intended for taking pictures, each is, in most instances, particularly suitable for specific applications. And while each of these cameras may be pressed into use for other types of work — they are not all equal in their versatility.

The reflex, for example, has brought greater ease to composition, but has not particularly extended the camera's usefulness beyond taking pictures. There is much to be said for the adaptability of the miniature. But, basically, its greatest contribution to the cause of photography has been as a medium for candid, unposed, action pictures — under available light conditions.

It would appear, that among them all, the sheet film camera takes first place for inherent versatility. The Linhof Super Technika alone establishes this beyond any doubt. It has, in fact, been referred to as the world's most versatile camera.

To start with (and the Super Technika shares this advantage in common with all sheet film cameras) there is a greater variety of sheet film emulsions than all other types combined — for practically every possible requirement in photography: commercial, process, portraiture, industrial, scientific, etc. And, with the larger negative size, there is virtually complete freedom from grain and critical processing problems.

This alone would commend the large camera for the greatest number of photographic applications. But, there is more — much more. The Super Technika owes its versatility, not merely to the great variety of film emulsions available. It is the one camera with every conceivable facility for doing the great variety of tasks which arise in photographic work. To own a Linhof Super Technika is to be best equipped in photography.

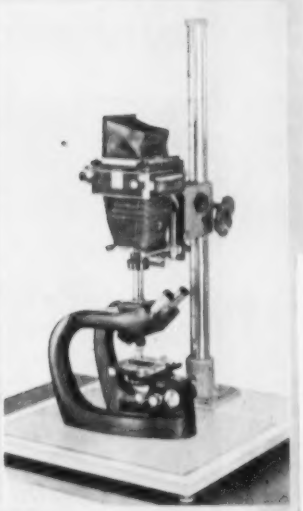
These features alone may give you some idea of the vast scope of this remarkable instrument:

- **Built-in Multifocus Rangefinder** with *optical prism* for maximum brilliance and accuracy.
- **Couples to as many lenses** as desired by *simply and easily* interchangeing coupling cams.
- **Extra Large** coupling cams for most *precise tracking* to focusing curve.
- **3-Section Track Assembly** and *triple extension* bellows allow extreme closeup photography and the use of longer tele lenses.
- **Revolving Back** permits choice of vertical or horizontal format without altering camera position or removing from tripod.
- **Camera Movements** — horizontal, vertical and diagonal back swings — together with rising, falling, tilting, shifting and swinging lens standard — for control of perspective distortion and depth-of-field.
- **2-Position Drop Bed**
- **Rapid Lens Interchangeability** — the *world's finest lenses* to choose from — Linhof-tested and approved.
- **All-metal Construction** — precision tooled and luxuriously finished.

These are all added advantages which you do not find in any other camera in the field — and which you can enjoy for very little more than the cost of conventional equipment.

Copies of this and previous ads describing Super Technika features may be obtained by writing to the address below. Descriptive literature and price information will be included. Super Technika cameras are made in 2¼ x 3¼", 4 x 5 and 5 x 7.

See Your LINHOF Dealer for a Super Technika demonstration.



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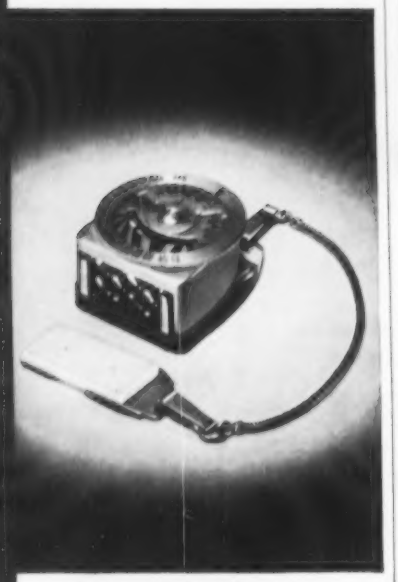

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The LEICA-METER 2 is a precision photoelectric instrument—accurate, dependable and easy to operate even with one hand! With the supersensitive booster cell in place (for readings in dim light), the meter has a measuring range of 1/1000th of a second to 120 seconds. Readings by either reflected or incident light.

LEICA-METER 2 fits into accessory shoe of Leica, into retainer plate on chain, or can be carried separately.

Included with the LEICA-METER 2 are: booster cell, incident light adapters, carrying case, retainer plate and chain.

LEICA-METER 2, complete . . . $24.00

Leica

E. LEITZ, INC.
468 FOURTH AVENUE, NEW YORK 16, N. Y.

TOOLS AND TECHNIQUES

by Norman C. Lipton

A round-up of recent developments and significant trends

Ampex VR-1000 Videotape Recorder. For the past five years, we have been watching the gradual development of video tape recording. The almost unbelievable concept of picture recording, storage, and reproduction by means of the thin magnetic-oxide-coated tape used for sound reproduction first came to light in the fall of 1951 when Bing Crosby Enterprises of Hollywood first demonstrated a somewhat imperfect black-and-white picture reproduction system. The most dramatic demonstration of the possibilities of such a system was mounted at the Princeton, N. J., research laboratories of RCA on December 1, 1953, when full-color images were picked up and reproduced from a closed-circuit TV system of a program previously sent by micro-wave from New York City 45 miles away (see POPULAR PHOTOGRAPHY February 1954). However, the biggest surprise of all in this highly competitive field was the launching of a previously unannounced Video Tape Recording System ready for immediate black-and-white TV rebroadcast use, by the Ampex Corp. of Redwood City, Calif. This epic event took place on April 15 of this year at the Chicago convention of the National Association of Radio and Television Broadcasters. Three complete units each were sold on the spot to the National Broadcasting Company and the Columbia Broadcasting System for delivery this fall, and orders were taken for 75 additional units from various other organizations.

Magnetic head assembly of Ampex Videotape Recorder is mounted on top of console which features push-button controls. Two-inch-wide magnetic tape travels at 15 inches per second past rapidly rotating drum with four heads.

The new Ampex unit is basically a modification of the Ampex Standard Tape Recorder originally designed for audio instrumentation purposes. It is capable of handling 64 minutes of program material on 2-inch-wide 1-mil-thick Mylar tape, on a 12-inch reel. In operation, the tape speed is only 15 inches per second; the effective tape speed necessary to record and reproduce the full 4-megacycle video band is achieved by using four magnetic heads on a drum that rotates at very high speed. A conventional, fixed single-head transport system would have to operate at 2,000 inches per second to equal it. Unlike audio tape recording where the magnetic pattern is reproduced longitudinally along the tape, the Ampex unit records its pattern transversely across the tape. The accompanying sound is recorded conventionally along one of the edges. The entire equipment, including a desk-size console, weighs only 900 pounds and can be moved through a 3-foot door. The unit's 117-volt single-phase 60 cycle power cable draws no more than 3½ kilowatts. The first six prototype units ordered at the Chicago convention of the NARTB were priced at $75,000. Later production units may be reduced to as little as $45,000.

On a chance visit to Chicago during the NARTB convention, we dropped in to the Ampex demonstration room at the convention premises—the Conrad Hilton Hotel. There we saw repeated reproductions, erasures, and rerecordings from TV programs in the Chicago area which to our critical eye appeared to be flawless. Subsequently, a survey paper describing the Ampex VR-1000 Videotape Recorder was presented by Charles P. Ginsburg at the semiannual convention of the Society of Motion Picture and Television Engineers in New York. Copies of this paper can be had from Ampex. A full engineering report on the system will be presented next October at the next SMPTE convention on the West Coast.

Polaroid Transparency System. The exhibit of the Polaroid Corp. at the MPDFA trade show last March featured the as yet unannounced Polaroid one-step, two-minute direct-transparency process. In addition to Type 36 Polaroid transparency material designed for use in the company's Highlander camera and Type 46, for all other Polaroid cameras, a new dipping kit for applying the lacquer coating to the end-product was demonstrated along with new-type slide mounts and the prototype of a new projector. The entire system was said to be a forerunner of Polaroid's 2¼x2¼ color transparency process.

The dipping kit consists of a plastic reservoir containing the preservative solution which has to be applied to both sides of the camera-processed transparen-

"...there is no short cut to perfection"

Leading in the field of precision optics, the makers of LEICA cameras and lenses have had more than one hundred years of experience in optical science and manufacture. Advanced engineering design, the highest-quality materials, and meticulous craftsmanship of the kind handed down from father to son form the basis for the reputation of the world-famous LEICA lens. Universal acceptance of the LEICA lens as the *optical standard* for 35mm photography emphasizes that "...there is no short cut to perfection."

LEICA lenses excel because they combine speed and resolution with an *optimum over-all correction*. This means that with a LEICA lens, at any aperture, you get: absolute corner-to-corner sharpness and even brightness; superb color correction; and an individually selected focusing mount for each set of lens elements which ensures maximum accuracy in focusing. Not only is each LEICA lens painstakingly inspected during and after the assembling but it is also photographically checked for performance. With a LEICA lens in your camera you have the assurance of a *perfection* made possible by more than a century of experience in fine lens manufacture.

SUMMICRON 50MM, f/2 A triumph in optical engineering—a seven-element lens incorporating a new design principle—utilizing airspace for optical functioning together with newly-developed high-refractive optical glass. The *only* high speed lens that gives maximum corner-to-corner sharpness and even brightness, plus *optimum over-all correction*. The *ne plus ultra* for color photography.

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Only a Tiffen Polaroid® filter does so much with *all* film, color as well as black & white! It's the universal filter that improves every subject, and can be used in combination with other filters or close-up lenses. A few of its multi-purpose uses are: darkens blue skies with color film, without affecting other colors; eliminates glare on water, glass and other reflective surfaces; reveals detail and texture, and true color that is usually washed out by surface glare.

With the Tiffen Polaroid® Rotoscreen, you see the result before you shoot, directly thru the Rotoscreen, or with its extension viewer . . . and achieve any degree of polarization in a choice of settings.

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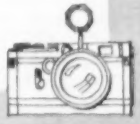

Tiffen® ROTOSCREEN

In Canada: ANGLOPHOTO, LTD. Toronto Vancouver Montreal

cy, and it should suffice for six 8-exposure rolls of the Type 46 material. The dipped transparency is pulled out of the reservoir through a squeegee top which returns most of the excess liquid to the solution supply. The projector, made by the American Optical Company, has a 500-watt lamp; it is expected to sell at about $100. As for the film materials, both the larger Type 46 size, which will sell at $3.10, and the smaller Type 36, at $2.25, produce eight 2¼-inch square transparencies per roll. A mid-summer target date was estimated for the delivery of this black-and-white transparency process. (In our first discussion of the transparency process in T&T for January 1956, we referred to the unusual qualities of the material including a daylight exposure index of 1,000, and critical sharpness as well as a long gradation range.)

Kodak Type R Prints. With all the recent interest in the wonderful possibilities of Kodak Type C color material for printing Kodacolor and Ektacolor negatives on paper, E-K's paper-base Type R reversal material for printing color transparencies has slipped into the background. But progress is continuing a space with Type R as well. Pathecolor, Inc., has exhibited a number of promising examples of direct-color prints on the new positive-to-positive material at recent trade and consumer shows. Even more substantial has been the Type R production operation of the Calev Brothers commercial photofinishing laboratory in downtown New York which we recently inspected. This organization has been producing Type R color prints of good quality since early spring of this year, utilizing Kodak's latest automatic printing and processing units. The Calev price schedule lists wallet-size (2½x 3½-inch) Type R prints from 35-mm and 828 (Bantam) transparencies at 35 cents each; 3½x5-inch jumbo color prints from 35-mm, 828, and 2¼x3¼-inch transparencies and 3½-inch square prints from 2¼x2¼-inch transparencies (all supplied with white borders) are priced at 60 cents each. The Calev laboratory, one of two in Type R print production in this country at this writing, is in effect a model small-scale finishing laboratory, and its success with the new material presages a successful future for the new process.

Sylvania RF Lamp. Details of Sylvania's revolutionary concentrated arc lamp energized by radio frequency which we described briefly last October in our T&T coverage of the 1955 SPE Convention, were recently released on both a practical and a technical level. First, chronologically, was the publication of a paper describing the lamp, its characteristics, and practical performance *A Uniform Blackbody Light Source Excited by Radio Frequency*, by Sanford C. Peek (*Journal of the SMPTE*, Dec. 1955). Later, on February 2, 1956, at the Hotel Vanderbilt in New York, came a Sylvania press conference at which Mr. Peek described in nontechnical language much of what he had covered in his paper. He also demonstrated the lamp as it is used in motion-picture printing machinery as well as in 16-mm motion-picture projectors. Basi-

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Now you can get, *with certainty,* vibrant, true-to-life colors in all your color work . . . *transparencies, color negatives and prints, color movies.* Note the ⅓ f stop markings on the exposure dial of the new Master III. This exclusive feature assures the *extremely precise* settings which assure *precise* color rendition. Not *pretty good* color reproduction, but *exact duplication.* And to further assure its high accuracy, the Master III has a new "ruggedized" instrument movement . . . skillfully cushioned to prevent shock damage, and thus preserve its accuracy *throughout the years.*

The Master III also is the most convenient, most versatile meter to use. Just set the arrow to the light reading, and you instantly have all exposure combinations for conventional cameras, and the correct number settings for both Polaroid Land cameras, and those with Compur LVS shutters. Calibrated to ASA specifications for exposure meters, the Master III provides emulsion speeds up to 3200 . . . to remain serviceable for years to come.

If you want the *best* color results . . . black and white, too . . . get the new Master III. See it at your local camera store, today.

EXPOSURE METERS *by*

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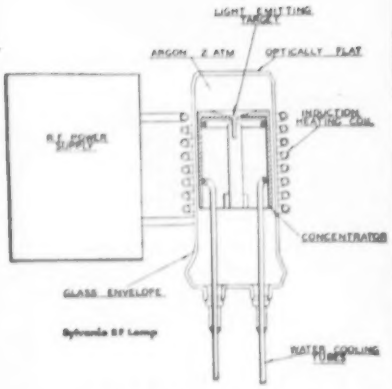
The Meters Most Photographers Use

cally, the light emitted by the RF lamp comes from a disk of tantalum carbide which is heated by radio-frequency waves to a point where it emits a continuous spectrum, the color temperature of which can go as high as 3800 K. Its advantages are greater stability, higher brightness, and better uniformity. (The lamp is currently priced at $100 whereas the fixture, including the Radio Frequency power supply, runs in the neighborhood of $1,900.)

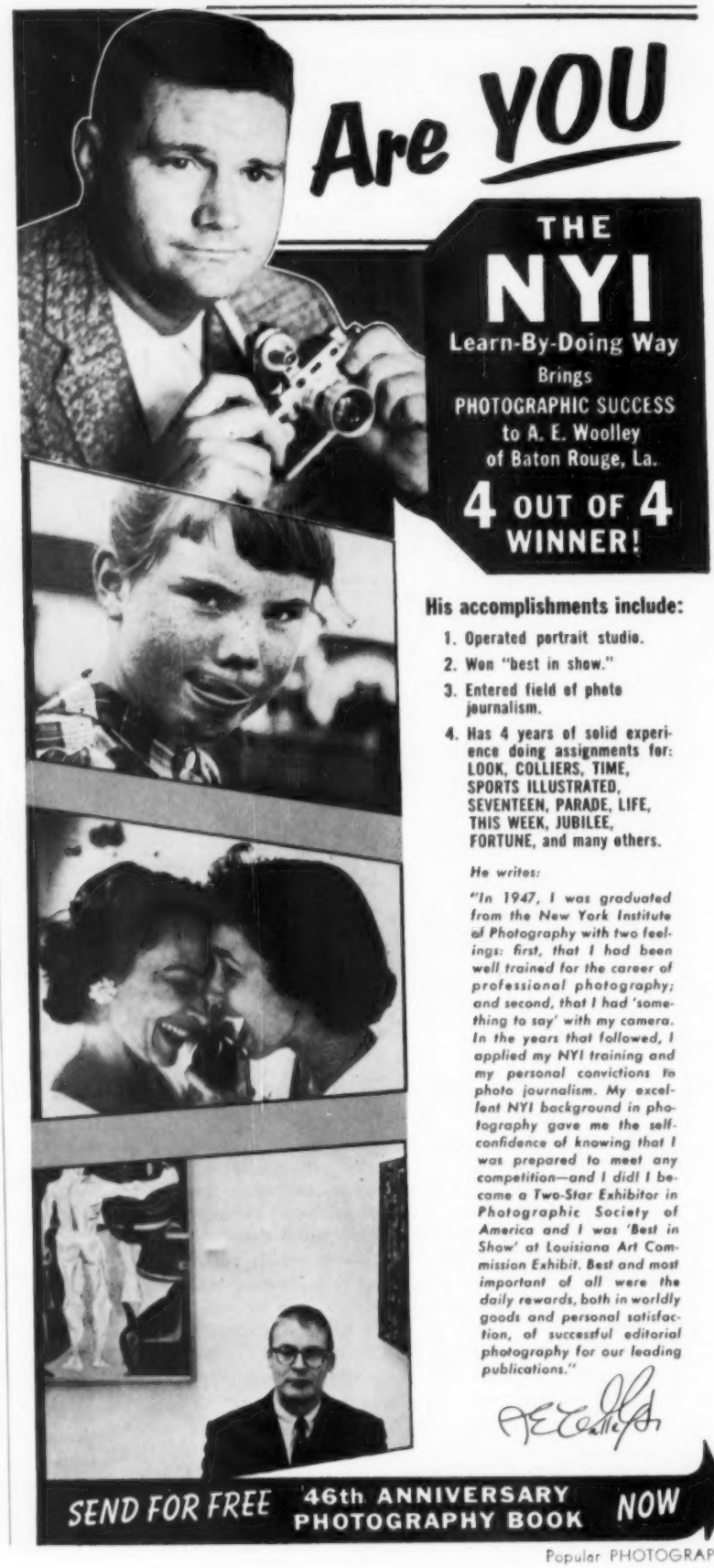
It was explained that in optical ciné printers, the RF lamp can be installed with the condensers butted up against the face of the lamp. This arrangement, with the high inherent brightness of the source, provides an unprecedented ad-



Structural features of Sylvania's RF Lamp (top) activated by radio frequencies are outlined in above sketch; tantalum carbide disk is used to produce extremely even, bright light.

vantage in the way of light output. Additionally, in three-color additive printing, there is no blue-light bottleneck which occurs with lamps of lower blue output. Also, by reason of the uniformity of the source, there is a decided advantage in print quality without necessitating the use of diffusing filters in the printing light path. As for 16-mm projection, the great advantage is in brightness. And because of the uniformity of the tantalum-carbide disk, the source can be placed in the film gate without danger of the image of the source being projected on the screen superimposed over the picture image.

The first commercial installation of the Sylvania RF lamp has been made by Consolidated Film Industries, who report an increase of printing speed of 8 times over that provided by conventional light



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PRESENTING **... Great, New Edixa Stereo Cameras ... destined to open a new era in 3-Dimensional photography! Plus the fabulous, new Steinheil Stereo Redufocus Wide Angle Converter ... the most outstanding photographic discovery of our time!**

Edixa Stereo Model IIIA shown with Steinheil Redufocus Wide-Angle Converter Set

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This is the greatest, most-advanced Stereo Camera of our age. This spectacular New Edixa Stereo Camera has a Coupled Rangefinder and built-in Photo Electric Exposure Meter ... and two matched f/3.5 Steinheil Cassar color-corrected lenses in two coupled Prontor-SVS shutters with 9 speeds ... settings of bulb, 1 second, 1/2, 1/5, 1/10, 1/25, 1/50, 1/100, 1/300 and self-timer. Also, built-in flash synchronization and rapid-winding lever, double exposure prevention, self-cocking lever, cable and tripod sockets and other features. Beautifully finished in satin chrome and black morocco leather. Priced at only.....**$99.50.**

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Steinheil's Scientists have just invented the New Redufocus which enables Stereo Photographers to instantly convert an Edixa Stereo to a Wide-Angle Stereo Camera! The Redufocus is attached, in a matter of seconds, to the Edixa Stereo Camera, and provides for outstanding interior shots, groups, sports, etc. The Redufocus wide-angle converter set is priced at **$119.50** with compensating viewfinder, and luxury leather case.

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The world's most magnificent Coupled Rangefinder Stereo Camera with Fully Automatic Features and f/3.5 Steinheil Cassar color-corrected lenses in two coupled Pronto shutters with speed settings of bulb, 1/25, 1/50, 1/100 and 1/200th of a second; also, self-timer, built-in flash, rapid-winding lever, double exposure prevention, self-cocking lever, cable and tripod sockets. Custom finished in black morocco leather and satin chrome. Priced at only.....**$79.95.**

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Glamorous as it is efficient, the Edixa Stereo IA will give you pictures of "exhibition" quality. Two matched 35-mm., f/3.5 Steinheil Cassar lenses assure you of crisp, needle-sharp color pictures every time! The rapid-winding lever transports the film, cocks the shutter, moves the film counter and prevents double exposures. The Vario shutters will give you a choice range of speeds from 1/25th to 1/200th second; other features include a body shutter release, built-in flash, built-in accessory shoe for rangefinder, cable and tripod sockets. The Edixa Stereo IA is finished in satin chrome and black morocco leather, and is priced at only.....**$59.95.**

See these new, exclusive Edixa Stereo cameras at your local dealer or write for colorful brochure.

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sources. Eventual conversion of all optical printing equipment to the new source was predicted by Carl Hauge, Consolidated quality-control engineer. Of interest to those on the photographic end, was the information that Sylvania is now working on the possibility of using the RF lamp for studio set lighting.

Stereo Close-ups. Although the Kin-dar Corporation of Milwaukee has withdrawn from the stereo-camera manufacturing field, a precision accessory carrying their trade name is now being actively promoted by Speedlight Center of New York. The unit is the Kin-dar Hypo Stereo Attachment. It is designed for making close-ups in three dimensions at distances between 9 and 3 inches from the camera with the Exakta VX 35-mm single-lens-reflex camera. Priced at $179.50, the attachment consists of a bayonet-type lens mount with two matched 35-mm Steinheil Cassar f/3.5 lenses having an interocular separation of .625 inches, plus a pair of supplementary 300-mm lenses which are thread-mounted to each other and to the basic attachment.

Correction: Keystone's K-32Z 8-mm Auto Focus camera comes as a complete unit at $239.50, equipped with a factory-installed zoom lens made by Ednalite. The unique lens is not available separately as implied in our coverage of the Chicago MPDFA Trade Show in our June issue. A detailed description of the Keystone K-32Z appeared in the movie section of our May issue under the title *Zoom Cameras Are Here.*

Odds & Ends. A new model of the Graphic 35 camera introduced at the recent National Photographic Show at the New York Coliseum can be preset for *any* combination of photoflash bulb and film by means of a scale of flash guide numbers engraved on the underside of the camera's "universal spectramatic band" ring. The guide number scale runs from 30 to 300. Once the scale has been set for the proper guide number, the camera is focused by the "push-button" control and the lens-diaphragm control is adjusted on the spectramatic band to match the color on the focusing control, thereby producing a correct flash exposure.

. . . The West German camera industry accounted for 69 percent of U. S. imports in dollar volume and 70 percent of precision cameras (valued at more than $10) in 1955, according to figures recently released by the U.S. Department of Commerce. Our market has been an expanding one—a total of 1,274,591 still cameras valued at more than $37,337,000 were imported in 1955.

. . . The Photo Lamp Dept. of Westinghouse recently announced its intention to match the increased light output of G-E's new PowerMite M2 flashbulb which has a pinless miniature base. The "souped-up" Westinghouse M2 bulb is 1/16 inch smaller than G-E's and delivers the same 7,000 lumen seconds. The peaking time continues at 18 milliseconds as contrasted to 15 ms for the G-E.—▶

It was one of those once-in-a-lifetime shots

and 60 seconds later I knew I had it!

With the Polaroid Land Camera, you're *sure* of your vacation shots. There's no disappointment back home weeks later when you find out the picture you wanted most was blurred, a double exposure, or just plain didn't turn out.

All that is out. With this camera you take a picture one minute and see it the next. If something goes wrong—if the sun ducks in behind a cloud or if Billy blinks just as you click it—don't worry about it. Just snap another picture, wait another 60 seconds, and there's a perfect one!

The main thing, though . . . is the fun. The tremendous kick the whole family gets out of seeing pictures a minute after they were snapped. Just imagine . . . at picnics, the beach, holidays, parties, weddings . . . the idea of passing finished pictures around as fast as the camera can turn them out!

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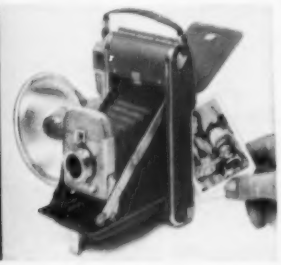
Land
CAMERA
with remarkable
new film



But that's not all. Now there's a great new panchromatic Polaroid Land Film that makes the *quality* of these pictures really great. The richest blacks and snowiest whites you've ever seen. Detail that's razor sharp. Warm flesh tones that make your shots of people look amazingly lifelike. These pictures *last*, too, like any fine prints. And it's no problem to get all the copies and enlargements you want.

Why don't you do this. Drop into any camera store. Take a look at this camera. They've got a demonstration model you can use to take a couple of shots yourself. It's a cinch to work.

What's the price? Only $69.95. (Bet that's less than you figured!) If you prefer, you can buy it for only $1.19 a week. But the main thing is to go down and look at it. Do it before the summer's half over.

ELIMINATE EYESTRAIN

NEW AO EXECUTIVE

with Exclusive RESTLITE FILTER puts greater comfort and pleasure in slide viewing — eliminates eyestrain

Direct from the Research Laboratories of American Optical comes the greatest advancement in slide viewing — exclusive AO Restlite Filter. No more complete black-out during slide changes. Instead, the new Restlite Filter produces a uniform light scientifically selected for intensity and color to provide "Balanced Vision" during slide changes.

The fabulous new AO Executive is years ahead in styling, engineering, and performance. All new optical system produces brighter pictures than ever before. Condensing system can be easily removed for easy cleaning. New universal low cost slide tray holds 40 glass *or* cardboard mounted slides. New Unitized panel board places all controls at the operator's fingertips.

Your friends will all sit up and take notice when you project your slides with the new AO EXECUTIVE.
Stop in and see it at your favorite store as soon as you can.

OLD WAY

Frequent changes from brightness to black-out to brightness cause eyestrain.

NEW SCIENTIFIC WAY

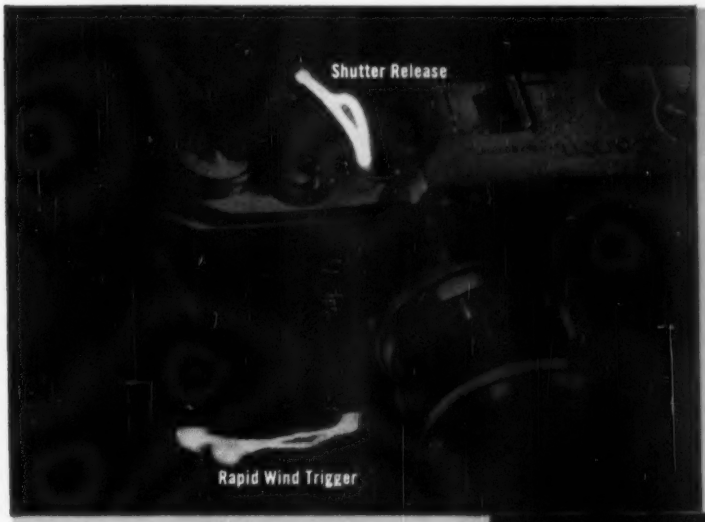
Increases viewing pleasure and comfort by uniform light between slides — eliminates eyestrain.

American Optical
CHELSEA, MASS.

300 WATT
$77.50 with case

500 WATT
$84.50 with case

COMPARE THEM
...for speed of operation!



CANON Model V

In this age of split second timing, you can appreciate the importance of having a camera that divides its operation between *both* hands, so that no time is lost in shifting hand positions. These photographs compare the *instantaneous action* of the Canon V with the *unwieldy operation* of the pre-Canon 35mm camera. Here, three exposures were made in rapid succession, while lighted bulbs taped to the operator's fingers trace his movements. Note Canon's extreme *economy of movement;* the left hand cocks the shutter and winds film in a single short stroke, and the shutter finger never moves off position. Your eye never shifts from the subject because of the sensible division of labor between both hands.

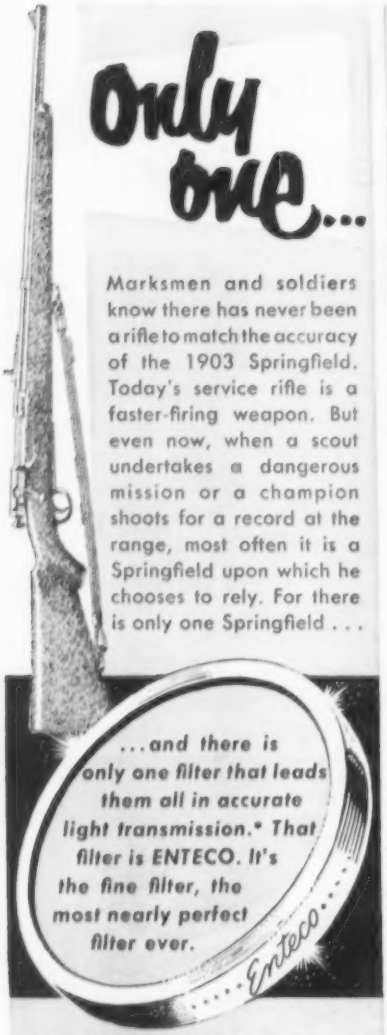
CAMERA "X"

In Camera "X," you must move its top-of-camera lever six strokes to get three exposures. After each two strokes, the shutter finger must *grope* for its position while your eye loses its subject. The waste of motion is graphically charted in this actual test photo. The lighted bulbs' path shows the full burden of operation concentrated in one hand, while the other hand remains idle. *An outmoded concept of camera operation!*

To fully appreciate Canon's functional design and *all* of its efficient operational features, you should see the Canon V first hand, at your Canon Franchised Dealer. Handle it, inspect it, for a revelation in camera "feel." He will gladly show you the complete new Canon System of Photography. Write for the name of your nearest Canon Franchised Dealer.

Canon V

CANON Camera Company, Inc. *U. S. Factory Branch:* 550 Fifth Avenue, New York 36, N. Y.



ENTECO POLARIZING SCREEN. Stops glare or reflection! Darkens skies without affecting other tone or color values. Enables you to shoot into water, through glass. Accommodates a second filter, permits rotation of Polarizer in Adapter Ring. Ser. 4-9, priced from $6.00.

ENTECO data and information charts are a MUST for every photographer. Write for the complete set FREE!

*Electrical Testing Laboratories, Inc., found ENTECO'S transmittance curve on Type A (85) filters within .3 of 1% of the established standard. Two other popular filter brands were off by 9.5% and 27.5% respectively.

Enteco.....

...Filters and Lens Attachments make Better Pictures ALWAYS

ENTECO INDUSTRIES, INC.
610 KOSCIUSKO ST., BROOKLYN 21, N. Y.

CAMERA CLUBS by Whit Hillyer

Every so often I am compelled to have a bit of a lark with some of our cousins north of the border who insist on spelling *color* as "colour." Allow me at this time to enter in evidence a recent issue of *Toronto Camera Club's* outstanding magazine called "Focus." This issue contains, on page 4, a letter to the editor, signed "Loyal Old Member" (shades of Fleet Street!). LOM tees off smashingly on several million of us peasants who spell it "color"—but he himself, interestingly enough, uses the word "favoring." No "u" whatsoever. And then on page 8 we find the editor using the word "favour." Wherever could *that* "u" have come from?

From then on, the whole blooming issue becomes a classic of inconsistency. Pages 6 and 8 carry quite a feature headed "Some Thoughts on Color," in which "color" is spelled *without the* "u" no less than 27 times. On page 10, we get back into step with "honour" and "honourable." But hold on—page 9 has the word "criticizes," with a "z," which is a bit on the Yank side, what? And back on page 5, for a moment, we find "focussing," with a double "s," whereas the preferred Webster (or rebel) usage is "focusing," with just one li'l old "s."

The Ansco folks spend quite a few of those Yankee dollars promoting their Ansco *Color*—why go to the trouble of putting in that unnecessary "u" on page 9? Costs more—and who should know better than Ansco what Ansco makes? This, despite the fact that you kept your editorial blue pencil away from page 19, where a local Toronto advertiser gets by with "color" (ugh!) in four different places. Sticky wicket, chaps?

Finally, there's more than a bit of just plain incorrect spelling, such as "accordianist" instead of "accordionist" on page 12, and "acheive" instead of "achieve" on page 22. Leafing backward once more, why not let the distinguished house of Ilford call its printing paper "Plastika," as widely advertised, instead of changing it to the much less interesting "Plastica"?

Having experienced so many truly enjoyable times in Canada, lads, it grieves me to see you wax inconsistent, particularly when you're in the act of putting us aborigines in our places. As one who in his salad days stopped many a puck (including one with his face) in playing your great national game, let me tell you what fun all this has been (pronounced "beeen") for me.

In all sincerity, I find "Focus" to be one of the best club periodicals to reach me. It's interesting from the eye-stopping front cover right on through, and the halftones are superb reproductions of your fine prints. So, no hard feelings, I trust.

Let's just say that this one was too good to pass up!

Care to Correspond?

Get your club secretary to work exchanging correspondence and ideas with the clubs listed below. They'd like to hear from you.

Klik Klak Klub (employees of Lever Brothers), Bill Eisner, president, Lever House, 390 Park Ave., New York 22, N.Y.

Martha's Vineyard Camera Club, c/o Freeman Wallin, Edgartown, Mass.

Southern Camera Club, c/o Jimmy McCarroll, 3005 North Hickory, Chattanooga 6, Tenn.

Simsbury Camera Club, Don Bullard, president, Eno Memorial Courtroom, Simsbury, Conn.

Saco-Lowell Activities Association Camera Club, Russell Lord, secretary, Saco-Lowell Shops, Biddeford, Me.

Student Photographic Club, care of Prof. P. Swings, University of Liege, Liege, Belgium.

We hear that *Chicago Color Club* has been holding half-hour instruction sessions prior to each meeting. Moderated by the capable Mildred Blaha, the palavers have dealt with fundamentals—slide-mounting, depth of field, and equipment, with slides to illustrate the points made. Mildred tells me that this routine was undertaken because *Color Club* felt that more should be offered to beginners. Fine idea.

Common Denominator department: Bulletins from two clubs recently gave details about their new members, and I couldn't help noticing anew the universality of photography's appeal. One group is in Ohio, the other in Oregon, and here's how the pedigrees read: optician, legal stenographer, CPA, wholesale jeweler, application engineer, research chemist, dental technician, and machine designer. What different kinds of eyes become glued to viewfinders!

A courtly Williamsburg-type bow to the State of Virginia, for erecting highway signs at strategic locations to warn the visiting motorist that an unusually pictorial view is coming up. Sample: "Photographic scenery 1000 feet on right."

Metro Movie Club's Margaret Conneely has one of her fine films making the rounds of cinema clubs in Sweden. What with raising two boys and keeping house, Margaret is my nominee for human dynamo.

Jack Cannon's Color Slide workshop has been packing 'em in on the West Coast. Several repeat performances. Good going, Jack—wish I could catch some of your act.

From the *Connecticut Valley Camera Club's* "Bulletin," regarding model night: "We've seen you snapping literally hundreds of poses at model nights—but there's a vicious rumor around that you don't load your camera."

Photographic memory, maybe?

Is your club on our mailing list? If not, please send name and address to: POPULAR PHOTOGRAPHY, Department 307, 366 Madison Ave., New York 17, N. Y.

AUTOMATIC

Exakta VX

EXAKTA FOR PRESS PHOTOGRAPHY

EXAKTA FOR MEDICAL AND CLOSE-UP PHOTOGRAPHY

EXAKTA FOR SCIENCE AND PHOTOMICROGRAPHY

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EXAKTA PHOTOGRAPHY is the ultimate in picture taking. There is no photographic task too difficult for Exakta . . . that is why it is the preferred camera of famous and discriminating photographers. Because of this versatility, Exakta has become a byword for exact photography.

EXAKTA PHOTOGRAPHY is 35-mm., single-lens reflex photography — a revolutionary technique made possible by Exakta's famous, unique design.

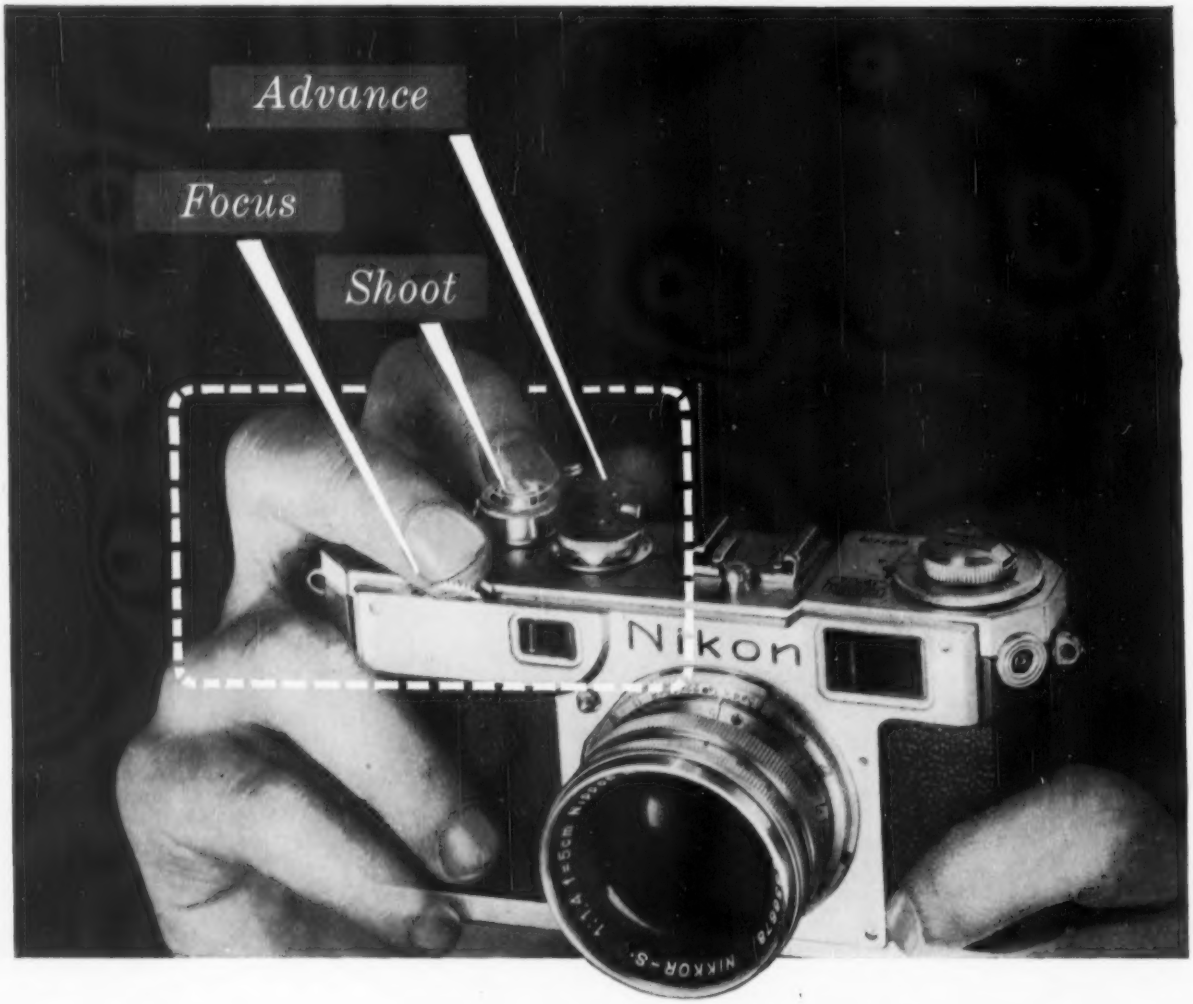
When you take pictures with an Exakta, it becomes your third eye because you actually see through the lens. You see the image of your subject, exact in size, composition, detail and sharpness — as the lens will record it. EXAKTA PHOTOGRAPHY gives you absolute control of every phase of the picture taking process. And, of course, the Exakta VX is equipped with the latest creation by Carl Zeiss Jena — the new and glamorous F/2.0, Biotar 58-mm. lens with automatic diaphragm. Only when you see and handle the VX will you be able to understand fully what automatic EXAKTA PHOTOGRAPHY is.

The Automatic Exakta VX with Penta Prism eye-level viewfinder and Split-image Rangefinder and 58-mm., F/2.0 automatic Zeiss Biotar lens is priced at $392.

We invite you to visit your dealer today and ask him to show you the Exakta VX, or write to us for more information.

EXAKTA CAMERA COMPANY, 705 Bronx River Road, Bronxville 8, N. Y.

Exclusive Factory Appointed Representatives in the U.S.A. for Sales & Service of Exakta and Exa Cameras



Try this with the... **NIKON S-2**
the Fastest Handling '35' in the Field

Camera quality is important and equally important is how quickly you can put that quality to work.

To get your picture, you must advance the film and focus the lens before you release the shutter. There's no short-cut. You can't skip a single step. It's advance – focus – shoot... 1 – 2 – 3 ... and the more quickly and smoothly you get it done – the more quickly you get to your picture.

Try the Nikon S-2 just that way: set your thumb on the advance lever – your middle finger on the focus wheel – and your forefinger on the body release. Note how easily you go through the three operations – advance the film – focus the lens – and shoot. Your fingers move but there is virtually no movement of the hand – no shifting to lens and back. And your left hand remains passive, concerned only with supporting and steadying the camera.

Now try this with any other '35' in the field. Go through the same three necessary operations: advance – focus – shoot ... and you will understand one reason why so many amateurs and professionals choose the Nikon S-2 ... *the fastest handling '35' in the field.*

Nikon S-2 with 50mm Nikkor f2 **$299.50**
Nikon S-2 with 50mm Nikkor f1.4 **345.00**

NIPPON KOGAKU TOKYO

See Your Franchised Nikon Dealer or write to Dept. RH-1

NIKON INCORPORATED · 251 Fourth Avenue · New York 10, N.Y.

Mikron Series Prism Binoculars ... finest at any price

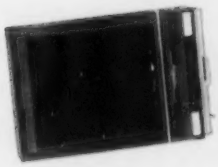
Own this Complete Outfit

only $17.58 a month

Now you can own a famous Pacemaker Graphic Outfit for only 10% down and small monthly payments. You can have the versatility of a Pacemaker Graphic equipped with 135mm Optar lens, Graphex fully synchronized shutter, Graphic Rangefinder, 3-cell Graflite battery case, 5" reflector, battery case mounting bracket and 20" shutter cord. Visit a Graflex dealer today . . . he is the only one who can sell you a Pacemaker Graphic on this Easy Payment Plan.

Get Economical ROLL HOLDER $1.26 a month additional

The Graphic Roll Holder easily adapts the Graphic for inexpensive standard 120 roll film. Provides either black-and-white or color pictures utilizing the many versatile features of the camera. Choice of two models for 2¼ x 2¼ or 2¼ x 3¼ negatives. Features an automatic film stop and visual exposure counter. Has dark slide.

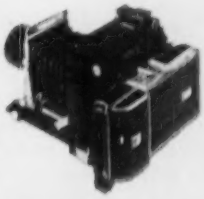


RITEWAY® FILM HOLDER

Cat. No. 1284 . . . The *only* film holder *unconditionally guaranteed for two full years!* The ultimate in film receptacles provides most accurate film positioning of any holder on the market. Far stronger than wood. Cannot warp. Increases monthly payments by only 26¢.

GRAPHIC® POLAROID BACK

Cat. No. 9108 . . . Provides pictures-in-a-minute plus all of the famous Pacemaker Graphic advantages such as interchangeable lenses, focal plane shutter and front adjustments. Especially valuable for checking light arrangements and composition. Adds $8.35 to the down payment, increases monthly payment $4.50.



FILM PACK ADAPTER

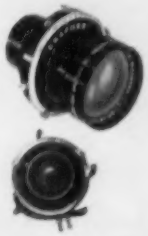
Cat. No. 1234 . . . Adapter holds 12-exposure film pack. Quickly slips into camera back. A film pack permits daylight loading, is purchased ready to use. Saves bulk and weight. Are useful when negatives must be shipped before developing. Increases monthly payments by only 60¢.

ACCESSORY LENSES

Now, anyone who buys a new Graphic can afford a wide angle and telephoto lens! Interchangeable cams for the Graphic Rangefinder adjust it for use with either type of lens.

Cat. No. 221 . . . 90mm (3½")
Graflex W. A. Optar, $5.76 a month

Cat. No. 283 . . . 25cm (10")
Graflex Tele-Optar, $9.12 a month



Prices include federal tax where applicable and are subject to change without notice. Prices are slightly higher in Canada.

Graflex Dealers are in the 'Yellow Pages'

GRAFLEX Prize-Winning Cameras

GRAFLEX, INC., ROCHESTER 3, N. Y.

V. M. Hanks, Jr. (Professional) covers U. N.
"Red" Quinlan (V. P., ABC-TV) monitors TV programs
Buell Scace (Sportsman) records road races

for their work and pleasure, **professional** photographers and **amateur** photographers always have the fabulous . . .

minox camera

in their pockets because—the world's tiniest precision camera is also the world's lightest, (weighs a mere 2½ oz.), fastest, and easiest camera to use.

critically sharp f/3.5 lens; focusing range: 8" to infinity; all speeds from 1/2 to 1/1000 sec.; magazine loading, automatic film transport; built-in orange and green filters; optical viewfinder with parallax correction.

minox III-S with chain and case **139.50**

the supreme *gift*

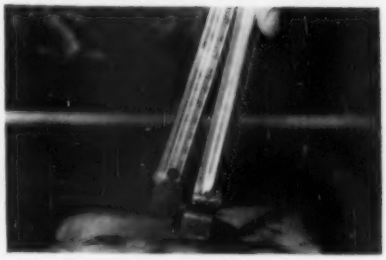
at all better camera counters

for literature, write Dept. G

KLING photo corporation
257 fourth ave., new york 10, n. y.

PHOTO TIPS—
SHORT CUTS TO BETTER PICTURES

Protect Darkroom Thermometer



Firmly affixed to inside surface of print tongs by means of transparent adhesive tape, a darkroom thermometer is given protection against breakage, while permitting constant check on temperature of developer solution during use. The assembly can be rinsed thoroughly and easily. Thus attached, the thermometer can be inserted into a bottle of solution for the purpose of temperature checking, without being dropped inside bottle.—*R. C. Wilson, Brentwood, Missouri.*

Cleaning Process for Camera

A large atomizer bulb with a one-way valve, plus a short length of rubbing tubing, will simplify the task of removing dust from hard-to-reach corners in cameras or other photographic equipment. The tubing is attached to the bulb, and secured with electrician's tape if the fit is not exact. When bulb is squeezed and released, effect is that of a vacuum cleaner. Soft bristles can be taped around other end of tube for brushing action.—*Ken Murray, Colon, Michigan.*

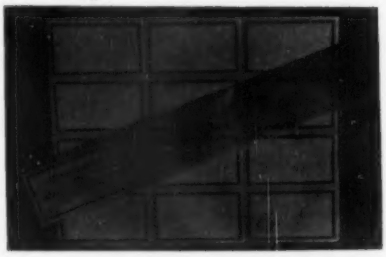
Quick Identification of Film Holders

Wide, heavy rubber bands in various colors, which can be bought at most stationery counters and dime stores, offer a quick and convenient means of identifying contents of sheet-film holders. For example, the type of film in a holder can be indicated by a band of one color used as shown in accompanying illustration; other colors could be used in the same manner to denote overexposed or underexposed film after pictures have been taken.—*H. Leeper, Canton, Ohio.*

Fishing Swivels for Neckstrap

An extra sturdy neckstrap for a camera is not difficult to make, but obtaining the type of swivel snaps desired for the strap sometimes presents a problem. Those designed for use by fishermen have been found to serve the purpose excellently. Available in several sizes, the snaps are durable and very strong. Their greatest advantage, however, is their positive locking construction which insures against possibility of their opening accidentally.—*A. A. Geyer, Pasadena, Texas.*

For Negative Filing



Gummed labels like those shown in the accompanying photograph can be used to advantage for identifying 35-mm negatives filed in strips in transparent or semi-transparent sleeves. Data and concise description of negatives are written or typed on a label, which then is affixed to sleeve directly over the negative it describes. If there are many negatives, sleeves can be numbered and numbers entered consecutively in a notebook for reference.—*R. Valantine, Provo, Utah.*

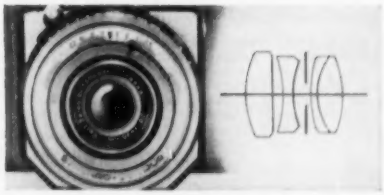
Why not send in your ideas for better picture-making and darkroom aids? We will pay $10 for each photographically illustrated Tip accepted—$5 if not illustrated. Material must be original and not previously published.

CONTAFLEX

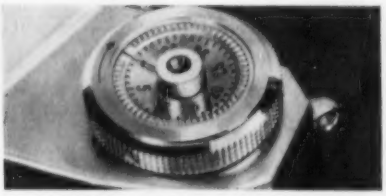
Most popular single-lens, eye-level reflex

Here are a few reasons why—You'll discover many more when you use it

Eye-piece shows view on finder which combines ground-glass and rangefinder for ultra sharp focusing. No parallax, no reversed image because you sight through the lens.

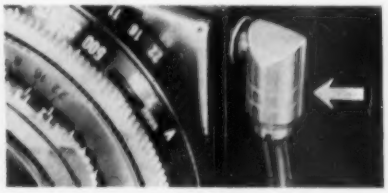


Zeiss Tessar f/2.8 45mm lens gives great depth of field, superb definition. You always focus at full opening, but diaphragm closes to preset stop when you release shutter.



Shutter winding knob automatically transports film. Counter shows number of shots made. Shutter release in center has threads for inserting cable release.

Back is completely removable; makes loading and cleaning easy. Camera accommodates two cassettes, enabling you to change films in full daylight.



Conveniently-located cable attachment for flash. The Synchro Compur MXV shutter, with linear scale and self-timer, permits use of all types of flash. Has speeds to 1/500.

Photoelectric meter in model II gives direct exposure readings for color or black-and-white film. Scale permits both ASA and DIN readings.

See the Contaflex I and II at leading dealers. Write for booklet.

CARL ZEISS, INC., 485 FIFTH AVENUE, NEW YORK 17

More Fun... More Thrills!

Long-range pictures you thought your present camera could *never* get... with new 7x photo-precision Binoculars!

Bushnell BINO-FOTO☆

35mm CAMERA UNIT *(Picture at top).*
Ideal for action shots. Complete, less camera, **$124.50***

TWIN LENS UNIT
At last! Twin Lens Telephoto. Complete, less camera, **$124.50***

SINGLE LENS UNIT
For 35mm Reflex. Complete, less camera, **$79.50** *Tax exempt*

*Federal Tax $9.46

Binoculars or Monocular may be used separately

Now on display at leading camera stores. *See it. Try it. Or mail coupon below.*

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FREE Lens Study

FUJINON

WORLD'S MOST PRACTICAL LENSES

f 2 35mm $179.50

f 1.2 50mm $299.50

New glass from rare-earth elements (U.S. Patents #2,718,174-#2,735,339) provides ultra-high speed plus superb definition at all f/stops. J. R. Eyerman, LIFE photographer, says: "...the FUJINONS ...most useful." Unconditionally guaranteed. At your dealer, or

MAIL TODAY for free studies, catalogs

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☐ Send facts and pictures on BINO-FOTO
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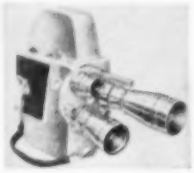
Name _____
Address _____
City _____ State _____
I have a _____ camera
My dealer is _____

WHAT'S NEW - TRADE NOTES AND NEWS

All data and descriptions ascribed to products listed herein are those claimed by the manufacturers and distributors, and listings are not to be construed as endorsements by POPULAR PHOTOGRAPHY. For further information write to address given in trade note.

CAMERAS



REVERE CAMERA CO., 320 E. 21st St., Chicago 16, introduces two spool-loading movie cameras. Both have automatic and manual threading. Among other features are hinged door which cannot be closed if film gate is left open, film cutter, top viewing of speed dial, lens setting, and footage counter. Model 101, with 1-in. Cine Raptar *f*/2.5 lens in a fixed-focus mount, is priced at $139.50. Model 103 (right) is similar to the 101 but is a turret model with corresponding objective viewfinders. Price, with same lens, $169.50. Both are available with choice of three lenses.

E. LEITZ, INC., 468 Fourth Ave., New York 16, announces a new feature on Leica M-3 cameras—a bright-line viewfinder enabling the photographer to preview the scene before choosing accessory 90- or 135-mm lenses. The newly devised frame selector is located on the camera's left side.

AK 16, a 16-mm movie camera, features reflex focusing with constant, through-the-lens viewing during shooting; variable shutter adjustable from 0 to 180 degrees and up to speeds of 1/380 sec; quick-change magazines; three-lens turret with coupled iris diaphragms to maintain constant exposure as lenses are rotated; 12.5-mm *f*/2.8 and 25- and 50-mm *f*/1.4 lenses; governor-controlled motor; and a 12-volt battery good for approximately 10,000 ft of film on one charge. Distributed by Hanimex (U.S.A.) Inc., 585 Market St., San Francisco, price is $1,950, incl. case.

CAMERA LITE, described on page 40 of the July issue of POPULAR PHOTOGRAPHY, is now priced at $12.95. Price change is due to revised ruling on import duty.

REALIST, INC., 315 W. Court St., Milwaukee, Wisc., announces price reductions on the following equipment: Realist 35 Model A, $37.50, with case and flash, $49.95; Realist Model B, $69.50, with case and flash, $84.50; Stereo Realist ST41, $129; and Stereo Realist ST42, $159.

LENSES

HILUX 16 is an anamorphic projection lens which enables users of 16-mm projectors to show 16-mm CinemaScope release prints. The *f*/1.6 lens is set in a variable focusing mount for edge-to-edge definition at all projection distances. A product of Projection Optics Co., 330 Lyell St., Rochester 4, N.Y., the price is $119.

ARRI PAN-CINOR *f*/2.4 varifocal lens (adjustable continuously from 17.5- to 70-mm focal lengths) is now available for the Arriflex Mirror-Reflex motion-picture camera. Action is controlled by a finger-tip-operated lever. Seven definite focal lengths can be set on a prefabricated scale and intermediate lengths can be interpolated. The lens has 16 elements, focuses from inf. to six ft, stops down to *f*/22, and weighs 29 oz. Kling Photo Corp., 257 Fourth Ave., New York 10, announces the price at $399.75, incl. lens shade and Series VIII filter adapter.

KODAK PROJECTION EKTANON *f*/3.5 lens provides a long "throw" for large audiences. This 7-in. lens is for use on Kodaslide projectors and is priced at $34.95. Manufacturer is Eastman Kodak Co., Rochester 4, N. Y.

FILTERS & ACCESSORIES

CONVERSION FILTERS permitting the use of Anscochrome Flash Type Film are announced by Enteco Industries, Inc., 610 Kosciusko St., Brooklyn 21, N. Y. The type known as #14 is made of high-grade, strain-free optical glass, and coincidentally eliminates the need for a haze filter. Prices for #14 range from $1.50 for 21.5-mm to $9.50 for Series IX. A less-expensive grade in slip-on mounts is available in three sizes: 25.5-mm, #13; 28.5-mm, #6A; and 31.5-mm, #5A. Each of these costs $1.80.

WALZ FILTERS, distributed by U.S. Photo Supply Co., 1204 G St. N.W., Washington 5, D.C., are announced in two new color densities. Walz Clearflash Filter #B-7 alters the color temp of clear flashbulbs from 3800 K to 6000 K. Walz Flood Lamp Filter converts Kodachrome, Anscochrome, and Ektachrome Type F to use with photoflood lamps. Both are screw-in types and prices range from $1.75 to $6.95.

FILTER KITS for all cameras and new color films are announced by Ednalite Optical Co., Inc., Peekskill, N.Y. They contain both conversion and correction filters as well as a filter holder and sunshade and are packed in a permanent carrying case which attaches to the camera-case strap. Prices start at $6.95.

COMBINATION CASE for Series IV filters holds six filters, an adapter ring, and a lens hood in compartments. A product of Enteco Industries, Inc., 610 Kosciusko St., Brooklyn 21, it is priced at $3.50.

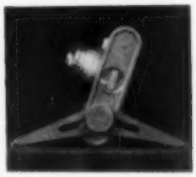
CAMERA ACCESSORIES

BOWER-UNIVERSAL VIEWFINDER for 35-mm cameras can be used for lenses having focal lengths of 35-, 50-, 85-, 90-, and 135-mm. Constructed of prisms, it shows simultaneously distance, object, and focal length and is fitted with an adjustable ocular setting for those who wear glasses. Price, incl. case, $49.50. Distributor is Saul Bower, Inc., 114 Liberty St., New York 6.

ACCURA PARALLAX ADJUSTER screws into the tripod socket of twin-lens-reflex cameras for close-up photography. After focusing, accessory lens is placed over taking lens and camera raised to proper position, correcting parallax. Distributed by Accura Ind., 67 Forest Rd., Valley Stream, N. Y., price is $1.98.

VOIT C22 is a one-piece molded underwater camera case claimed to be leakproof by the manufacturer, W. J. Voit Rubber Corp., 2945 E. 12th, Los Angeles. Price is $6.95.

ACCURA ZOOMFINDER with settings from 28- to 135-mm and parallax correction from 3 ft to infinity can be used with Leica, Canon, Contax, and Argus cameras. It shows a right-side-up, unreversed image and fits on the accessory shoe. Price is $29.95 and distributor is Accura Ind., 67 Forest Rd., Valley Stream, N. Y.



CAM POD is a folding device which performs the function of a tripod when attached to the camera and set on a flat surface. When not in use, it folds flat against the bottom of the camera. Priced at $1.95, it is a product of Duba-Matic Camera Prods., 14755 Agnes St., Wyandotte, Mich.

FOCORRECT is a focusing lens and rangefinder which, when attached to Models 95, 95A, and 100 Polaroid cameras gives the camera user the advantage of a coupled rangefinder. The unit slips into the camera shoe and an accessory shoe is provided for

CHALLENGE!

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Before you buy a new camera, see—and handle—the new, incomparable Praktina FX, now setting the pace in the fine camera field.

New! Enjoy 35-mm. Single-Lens Reflex Photography at a Popular Price!

The new 1956 Praktica FX2 outclasses all previous models of this popular camera! Offers you all the advantages of single lens reflex photography plus many other exceptional features of the Praktina FX. Value-wise, the Praktica FX2 is in a class by itself!

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Guarantee, Registration and Import Certificates furnished with each camera.

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951 Brook Avenue, New York 51, N.Y.
For 23 years manufacturers of quality photographic products

mounting flash units. Price is $39.50. Distributor is Geiss-America, 6424 N. Western Ave., Chicago 45.

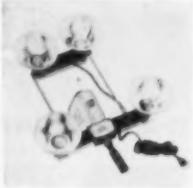
FLASH

MINOX electronic Flash, introduced by Kling Photo Corp., 257 Fourth Ave., New York City, weights 24 oz, has a folding reflector and telescoping flashtube, uses an Eveready #491 battery, and has a battery pack with provisions for carrying flashhead, reflector, and camera. Price is $82.50. Designed for use with the Minox camera, an adapter is available for adapting the unit to other cameras. Accessory a-c power unit is also available.

SKYLIGHT 20 is an electronic-flash unit developed by Milton J. Schwartz, 225 E. 44th St., New York 17. Simulating natural skylighting, the unit consists of 20 lamps synchronized to flash simultaneously and can be raised 12 ft off the floor. A similar model with 5 lights is also available. Prices are, respectively, $2,240 and $1,285, f.o.b. New York City.

ROLLEI LOCK Koiled Kord for new Rolleiflex and Rolleicord cameras, extends from 7 in. to 4 ft. It can be had with fittings for Graflex and Heiland flashguns, most electronic-flash units, and for Kalart, Praco, and COC flashguns. Priced at $2.95, the Kords are distributed by Spiratone, Inc., 49 W. 27th St., New York 1.

LIGHTING EQUIPMENT



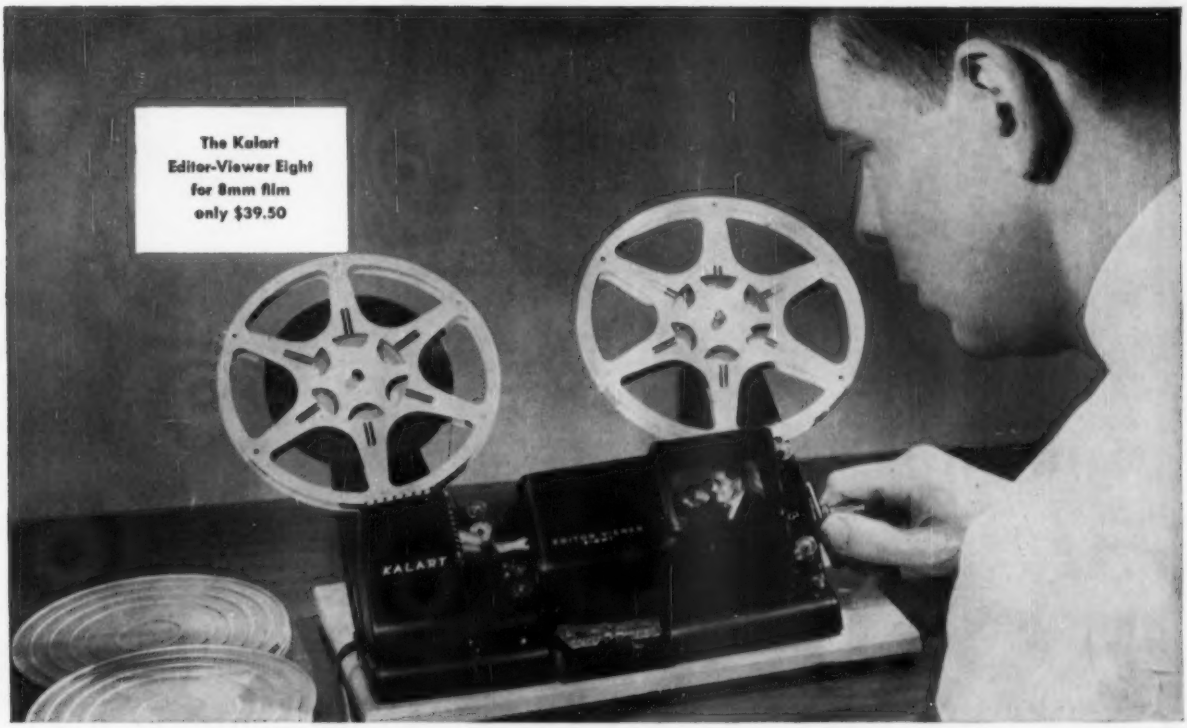
HI-LITER bar light is made by Remsel Ind., Inc., 500 E. 40th St., Chicago 15. Upper lights can be rotated for various degrees of bouncelighting and a rotary selector switch provides dimming and selection of 2 or 4 lamps. Price is $12.95. Write for description of complete line of 2- and 4-lamp models, which range in price from $4.95 to $14.95.

CINE-LIGHT Model 250, is a portable light pack for all-weather movie use with color or black-and-white films. Among features are flood and spot positions; 20 min of light at full output; 250-watt lamp with a 4-hr life; color temp of 3400 K; rechargeable Dynaseal battery; built-in automatic charger and voltmeter. Price is $325 and manufacturer is Dormitzer Elec. & Mfg. Co., 5 Hadley St., Cambridge 40, Mass.

ALL-PURPOSE PIC is a right-angle photo stand designed by Graflex, Inc., 154 Clarissa St., Rochester 8, to support lighting equipment, reflectors, and backgrounds. Constructed of Duralumin, one leg can be extended to better balance the weight of lights. It can be used vertically and has an extended height of 10 ft. Weight is 34 oz; price, $20.95.

FOLOW FOTOFLOOD trade-named "W-Lite" is a product of Arrow Photographic Products Inc., 108 N. Jefferson Ave., Chicago 7. It's employed in giving over-all balance when making indoor stills or movies and has an exposure guide to help make good pictures. Price is $5.95.

DYNASEAL Model DY-1012 is the name of a portable power pack delivering 115 volts, 60 cycles a-c from its self-contained rechargeable Dynaseal battery. Weighing 9½ lb, it can be used to power tape recorders, movie cameras, etc. Price of $195 includes built-in recharger. Manufacturer is Dynaseal Lighting Corp., 5 Hadley St., Cambridge 40, Mass.



You'll get a bigger kick out of your movies when you edit your films

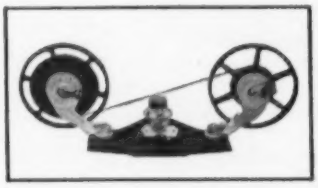
No one—particularly you, the movie taker—really enjoys films that aren't good from start to finish. So we suggest that you become your own movie editor.

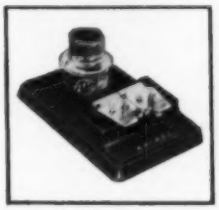
With the Kalart Editor-Viewer Eight it's easy and it's fun to trim out and discard over-exposed and under-exposed portions of film, false starts, fogged ends and unneeded leaders . . . and then splice into one continuous show all your best scenes. You can join newly processed film to older film and insert titles where you want them.

The Kalart Editor-Viewer Eight is just what you need to quickly become an expert home movie producer. Its *big screen* makes viewing easy by enlarging the pictures 12 times. A 30-watt lamp, convection-cooled, permits you to look at single frames indefinitely without overheating film or straining your eyes. Its *custom built-in splicer* makes editing simple and swift —permanently welds splices—is handy, too, for quick repairs while showing your movies.

The optical elements of the Kalart Editor-Viewer Eight are all precision-ground and polished; mounted on a rugged steel chassis. A smooth drive, controlled by a single handle, provides both forward and reverse projection. The Bakelite housing and polished hardwood base present a handsome appearance. And the whole outfit folds flat in a 10″ by 14″ by 4″ handy-carry carton—weighs only 6 pounds. For complete details, see your camera dealer.

The Kalart Custom 8 Splicer-Rewinder. A stainless steel splicer and two self-locking Foldaway Rewinds mounted on a molded, shock-resistant base. Accommodates 400 ft. reels. Folds to 9½″ by 5¼″ by 5¼″ . . . only $10.95, less reels and cement.





The Kalart Custom 8 Splicer. Lifetime stainless steel construction. "Floating Action" scraper removes emulsion quickly, smoothly. Blades cut film ends precisely. Unfailing pressure makes splices stick . . . only $4.95. Craig Formula No. 7 Cement, 1 oz. bottle, 40¢.

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In VENEZUELA: Seijiro Yazawa Apartado 3179, Caracas, Venezuela

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GROUP FILE 2 x 2 SLIDES THE EASY WAY IN FILES by
NEGA-FILE

L to R: No. PL-30-NF and No. PL-20-NF

Those new plastic Kodaslide boxes in which Kodak now returns your processed 2 x 2 slides fit neatly into these specially designed Nega-Files. They become perfect compartments for group filing . . . easy to remove and replace without disturbing slides as a group. Beautiful as well as practical, Nega-File hardwood cases feature beautiful finishes, lock-corner construction, brass-plated hardware consisting of handle, hinges, snap bolts; felted bottom; also removable index.

No. PL-20-NF Nega-File, in solid sycamore, holds 20 Kodaslide boxes, 400 slides...$6.45

No. PL-30-NF Nega-File, in solid sycamore, holds 30 Kodaslide boxes, 600 slides...$7.95

No. PL-20-SW Nega-File, in solid walnut with brass name plate, holds 20 Kodaslide boxes, 400 slides.....$9.45

No. PL-50-3500 (Sectional) Nega-File holds 50 Kodaslide boxes, 1000 slides.....$14.95

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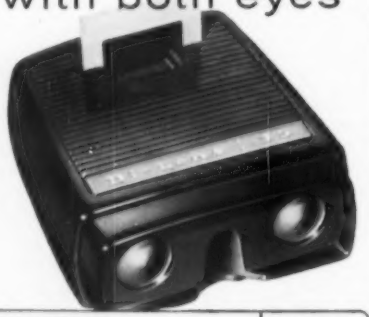
FREE CATALOG AND FILING HANDBOOK No. 11 describes full line of fine files by Nega-File. Send for your copy today.

Now view your slides NATURALLY with both eyes



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single slide viewer

See your 35mm and 828 slides—as never before!—with new Bi-Lens "35". Two-lens precision viewing eliminates eye-strain, distortion and disturbing objects. You see only the picture . . . in new depth and detail, big 5x magnification. A thrilling new way to view slides.

$4.95

Sawyer's Inc., Portland, Ore.

At camera counters everywhere

EXPOSURE METERS

ACCURA photoelectric exposure meter fits standard accessory clips of most cameras; has ASA film speed ratings from 1.5 to 800; aperture settings from f/6.9 to f/45; and shutter-speed ratings from 1/500 to 30 sec. Priced at $7.95, incl. leather case, distributor is Photographic Imp. & Dist. Corp., 135 Broadway, New York 6.

OCEAN STANDARD is a photoelectric exposure meter introduced by Ocean Photo Supply Co., Inc., 11 W. 20th St., New York City. It is equipped to give readings for LVS and for conventional settings by conversion. ASA exposure indexes range from .8 to 800; aperture range from f/1 to f/45; and time intervals from 1/1000 to 15 sec. Price, incl. case and metal chain, is $8.45. Descriptive literature is available.

MASTER III, a universal exposure meter, can be used with all film, still cameras including Polaroid and those with Compur LVS shutters, and movie cameras. Correct settings for all cameras and systems are shown automatically and simultaneously. It is calibrated in ASA specifications for film speeds up to 3200; reads by conversion in ½ and full stops. A product of Weston Electrical Inst. Corp., 614 Frelinghuysen Ave., Newark 5, price is $32.50, incl. case.

TRIPODS & ACCESSORIES

WINDSOR tripod has a built-in tilt pan head which can be adjusted horizontally or vertically with an extra 90 degree tilt on the pan head. It can be locked for movie panning, weighs 28 oz. and takes cameras up to 4x5. The tripod has six sections and extends to 48 in. Construction is of chrome plate and aluminum with Bakelite ribbing. Distributor is General Photographic Supply, 136 Charles St., Boston 14, and the price is $12.95.

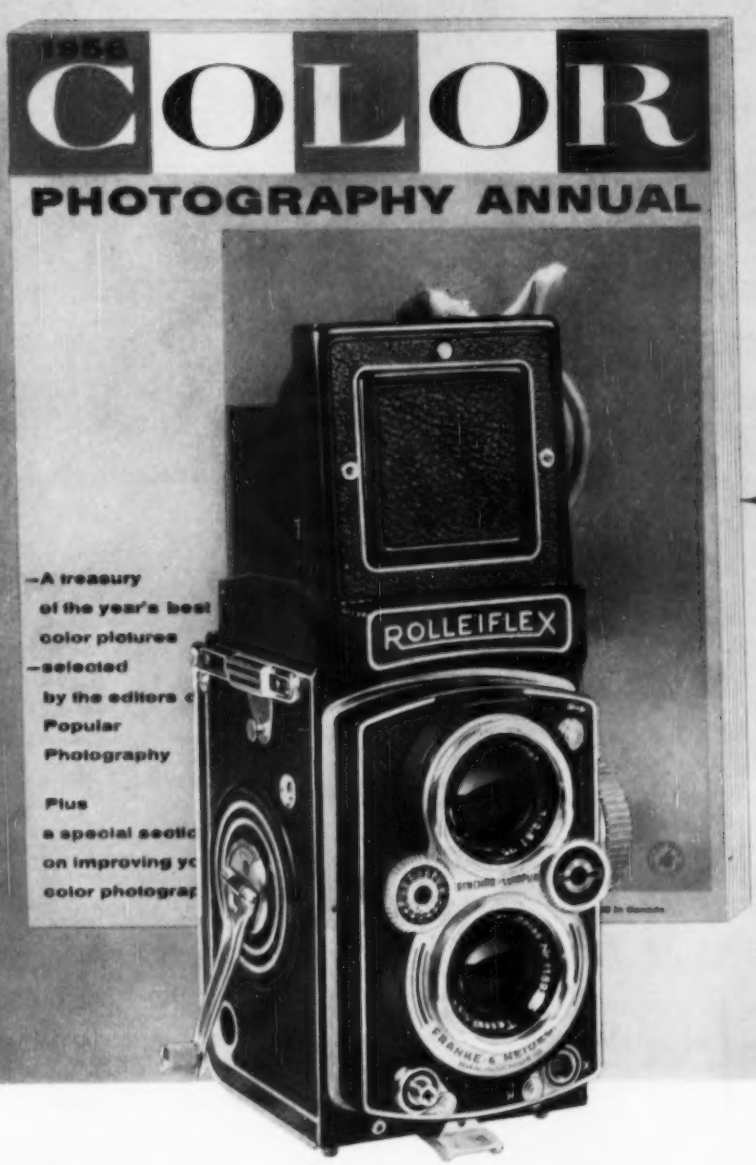
X-Y MOUNT, when placed between the tripod and camera, allows camera movement to left, right, forward, or backward, by turning a knob. Movement can be as little as .0078 in. per quarter turn although it can travel a full inch from the central starting point. It is suitable for titling, focusing, and optical bench work. The mount will fit all tripods and cameras and is especially suitable for high-speed cameras. Price is $325. Manufacturer is Photographic Analysis Co., 100 Rock Hill Rd., Clifton, N.J.

PROJECTING & VIEWING EQUIPMENT

MAGNA-SCOPE K-75M 8-mm projector has been added to the proj. line of Keystone Camera Co., Hallet Sq., Boston 24. Illumination is supplied by a 500-watt lamp and lens is a color-corrected Magna-Scope f/1.6, capable of filling a 40-in. screen at 13 ft. Other features are push-button tilt control, enclosed reel spindles and film drive, built-in separate room-light plug, single-knob control for on-off, forward, and rewind. Price is $74.95.

RADIANT MFG. CORP., 2627 W. Roosevelt Rd., Chicago 8, announces the release of new projection screens. The first is called

In the COLOR ANNUAL *too.*..



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West, Alaska & Hawaii: **PONDER & BEST, INC.** 814 North Cole Ave., Hollywood 38, California

SPEEDIER OPERATION — Single-stroke film transport; right hand cocks shutter and sets film counter, left hand holds camera, snaps picture.

FINER OPTICS — 4-element Prominar 75mm f:3.5; resolving power of 125 lines per millimeter, wide open by projection test method.

IMPROVED FOCUSING — Rationally-sloped convex ground glass offers 50% brighter center image, 5 times brighter image at edges.

FINEST SHUTTER — Seikosha, M-F-X synch to 1/500.

CLICK STOPS — On shutter and diaphragm settings; settings visible from above.

. . . and many more features! Only **$119.50** (plus case)

At your dealer or write for complete details: U.S. Factory Branch (Sales & Service)
KOWA OPTICAL CORP., 260 Fifth Avenue, New York 1, N. Y.
In Western States: Eana Optical Co., 163 Jessie St., San Francisco 5, Calif.
In Canada: W. Carsen & Co., Ltd., 88 Tycos Dr., Toronto 10, Ont.

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Voigtländer

BECAUSE THE LENS IS SO GOOD

Voigtländer **VITO B** *35mm Camera*

With automatic film transport, Voigtländer 4-element Color-Skopar f/3.5 lens, flash synchronized Prontor-SVS shutter, speeds to 1/300th. Priced in the United States and Canada, $54.50. Ever-ready Case, $8.25.

Made in Western Germany with German Accuracy and Care

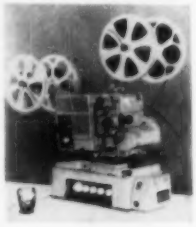
It's child's play to take a better picture with the VITO B 35mm camera. Its ease of operation, superior mechanism, and world-renowned Voigtländer high-efficiency lens afford a perfect balance that helps you master every photographic situation. See for yourself.

Voigtländer

See the Voigtländer Camera Family at Your Camera Store, or Write to VOIGTLÄNDER DIVISION, 110 West 32nd Street, New York 1, N. Y., or 345 Adelaide Street West, Toronto 2B, Dept. VP-5

Topper, and can be hung on the wall or used on a table or desk. Available in five sizes, the 18x24-in. screen is priced at $4.50. A line of portable tripod, wall-hanging, and frame-type projection screens are also available. Write for details and price list.

888-D is an automatic slide projector taking all transparencies in 2x2 mounts of all types, intermixed. Some features are extra condenser lens for use when projecting large 1½ x 1½-in. slide format; 5-in. Wollensak f/3.5 lens; 500-watt illumination; automatic preconditioning slide chamber; self-contained carrying case; and viewing screen. Price, incl. seven Revere magazine trays, is $159.50. Information available from Revere Camera Co., 320 E. 21st St., Chicago 16.



SIEMENS 2000 is a silent 16-mm projector convertible to 4,000-ft reel capacity and optical or magnetic sound, simultaneously or individually. Triple-claw feed is claimed to reduce film wear and give an absolutely steady image; stainless-steel chain drive through oil bath gives quiet operation; shutter is adjustable for 2- or 3-blade operation; and speed is controllable by an electric governor and stroboscope. Basic unit, with 2,000 ft capacity and an Astro f/1.2 lens is $399.50. Distributor is Hanimex (U. S. A.) Inc., 585 Market St., San Francisco.

MISCELLANEOUS

7x50 MONOCULAR for taking telephoto shots is actually one half of a U. S. Govt. 7x50 binocular adapted for photographic use. Price is $15, from Edmund Scientific Corp., Barrington 16, N. J.

INCORRECT ADDRESS was given for the National Camera and Repair School on page 155 of the June issue of POPULAR PHOTOGRAPHY. The manufacturer of Synchrotimer Syd is in Englewood, Colorado, not Calif.

PROFESSIONAL TITLER known as the Mansfield is announced by Mansfield Ind., Inc., 1227 Loyola Ave., Chicago. It is for all 8-mm and 16-mm movie cameras and comes complete with light unit and blank title cards. is Plainville, Conn. Construction employs a lathe-type V bed and non-slip legs, and the distance-correction lens and titling area are prefocused at factory. Price is $19.95 with light unit.

VILLA MFG. CO., 710 Seventeenth St., North Chicago, Ill., introduces a 2x2 glass-bound slide binder which accepts transparencies in cardboard mounts and which will fit into automatic and standard slide changers. A box of 36 units is priced at $3.75.

FILM CEMENT is announced by Kalart in 8- and 16-oz. bottles. This is the Craig Formula No. 7 Film Cement formerly sold only in one-ounce bottles. The 8-oz size is $2.45; price of the 16-oz is $3.50. Kalart's address

SP6 X-PANDO is a gadget bag with an extra zipper around sides and bottom which can be opened to make more room when needed. Opened, it adds 4 in. to the bottom of the bag. Made of cowhide, over-all dimensions are 10½ x14x5, and price is $19.95. Distributor is Spiratone, Inc., 49 W. 27th St., New York 1.—

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"My SMP training gave me the solid know-how to make progress rapidly — no loss of time through trial and error methods," he states.

J. RICHARD CHRISTENSEN

and his amazing rise to success as an oncoming leader in the field of fashion photography.

Only 3 weeks after completing his training, he was on his way to Florida — full-fledged assistant to a top fashion photographer. And now after a brief period of combining travel and work, he is going up the ladder on his own, making photographs for many of America's leading magazines. The foundation for his spectacular start was training with the

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"A master of moods and modes" A touch delicately different marks Jim Christensen's artistry in revealing the perfect appeal of feminine charm in appropriate styles and settings.

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You can enjoy the same success continually achieved by SMP graduates in every country of the world, in every state of the Union, and in every fascinating, well-paying branch of photography. You can readily gain the same SMP know-how which enabled them to make good, to become leaders among photographic craftsmen.

SMP's methods and special teaching devices make sure you attain full working knowledge of both principle and practice. You advance in knowledge and skill rapidly, under supervision of the most outstanding authorities in professional photography. You enjoy advantages never before possible through old-fashioned methods depending too much on printed texts.

Ingenious teaching kits, actual negatives, and photographic prints, charts, instruction guides, projection slides, and practical assignments guide you right into professional picture making. These exceptionally helpful aids enable you to *get much more* out of the modern, fully illustrated teaching texts which give you thorough understanding of both the fundamental and advanced phases of *all branches of photography.*

To let you see for yourself, and prove to yourself, the unusual advantages of this better system of home study, SMP will send you FREE their big new book explaining their result-getting methods in detail. One good look will tell you that this book is more than an explanation of advantages. It's an eye-opener that will spark you with new interest and ambition. You'll see pointedly that somewhere in photography's many branches there's a big-money place *just* right for YOU.

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CANDID SHOTS by the Editors

Twenty-Four by Thirty-Six

Here is another of those increasingly popular POP PHOTO issues devoted to a single subject. This time the subject is a whole system of photography: 35-mm. You will find the magazine well organized to present every aspect of miniature camera equipment and techniques—lenses, film, camera types, negative quality, the need for sharpness, new products, and a big 35-mm picture section. An added attraction is the feature on how a leading U. S. newspaper, the *Milwaukee Journal*, uses miniature cameras for spot news and features. The work of Journal

Milwaukee Journal's Abercrombie

staffer Tom Abercrombie is singled out as typical of today's best 35-mm news photography, demonstrating that not all the fine press pictures come from the biggest names on the biggest papers in the biggest cities. Our congratulations to Abercrombie for the example he offers to all news cameramen!

One ANNUAL After Another

Our 1956 COLOR PHOTOGRAPHY ANNUAL went on sale in mid-May, and by now you have either bought a copy or (very likely) found it a sell-out in your locality. We hope you were lucky enough to get one, for it is sure to be a collector's item before next year's issue appears. The public's response has been tremendous; letters of unqualified praise have come to us from the greatest personages in photography as well as from the "cameraman in the street."

Meanwhile, the 1957 edition of the COLOR ANNUAL's big brother, PHOTOGRAPHY ANNUAL, is in the last stages of production, and will appear on newsstands about six weeks after this issue of the magazine. It is hard to follow a successful book like the COLOR ANNUAL, but the 1957 ANNUAL will do a manful job of it, with

Next month

ANOTHER SPECIAL ISSUE:

COLOR

With fascinating features on
new color materials
color processing
color retouching
Flexichrome
color at night
markets for your color
color errors
. . . and a portfolio of glamor pictures in full color

WATCH FOR SEPTEMBER POP PHOTO

the usual 250-plus pages of great black-and-white and color pictures—again, the world's biggest dollar's worth of photographs. Watch for the ANNUAL; you'll be well rewarded.

How to Write Us a Letter

Apropos the ANNUAL, we received an inquiry from a potential picture contributor the other day, a Mr. Bertil Norstrom of Stockholm, Sweden. Scanning our table-of-contents page for an address, he came up with a truly remarkable one: "PHOTOGRAPHY ANNUAL, Reg. U. S. Pat. Off. 511955, New York, N. Y., U. S. A." Some misguided postal employee along the way changed the city to "Wash D.C.," but somebody in "Wash" took the trouble to look us up, and sent the missive on its way. We don't recommend this unusual address for efficiency; still, any address that gets to us is okay, we guess.

Camera "Builds" a Building

If you've studied art, you know there is a kind of painting called *trompe l'oeil*, meaning "deceive the eye." It refers to the kind of picture in which you reach out and feel the textures, even eat the fruit. Well, it has its counterpart in photography. Example: the General Electric Company recently commissioned an architect to design an atomic-power plant which it planned to build. From his drawings they constructed a miniature scale model, and they asked photographer Herbert Loebel to make some pictures of it. Setting to work resourcefully, he bought a number of the tiny lights which are intended for use in model-train layouts, and placed them just where lights would be when the full-scale plant was finished.

Loebel's "real" atom plant

This of course gave an effect entirely different from lighting "from outside" with floods or spots. He delivered his pictures to G-E in New York, and a few days later the architect came into an executive's office, and, looking over his shoulder, saw one of the Loebel pictures. "My God!" he gasped, "You've built it already!"

David Duncan to *Collier's*

One of our all-time favorite photojournalists has changed jobs, and we extend our best wishes to him for more decades of memorable picture making. After ten

Photo by Howell Conant

Collier's Duncan

years with *Life*, preceded by another ten as free-lance and Marine Corps photographer, David Douglas Duncan has joined the staff of *Collier's* in a move that the magazine's editor Kenneth McArdle calls, "a major step for *Collier's* toward the fulfillment of a merger of pictures and words as communications devices." Duncan, who was the first cameraman to arrive in Korea when war began in 1950, and who recently published a masterful word-and-picture coverage of Nasser's Egypt, went abroad immediately on joining *Collier's* on assignments in Europe and the Near East.

Follow-up on a Pen Pal

A few months ago we called your attention to the courtship and marriage of a British amateur photographer named Alan Simpson and a Milwaukee girl named Pearl Taenzer. The two had been brought together across an ocean and half a continent through the good offices of Camera Clubs columnist Whit Hillyer. Just in, a new dispatch from Whit, bringing just about the only kind of news one might have expected under the circumstances: announcement of the birth of Alan McKenzie Simpson, weight 7 pounds 1 ounce. "Never underestimate the power of the press!" says Whit. Never underestimate the tenacity or the fatherly interest of a columnist, either.—

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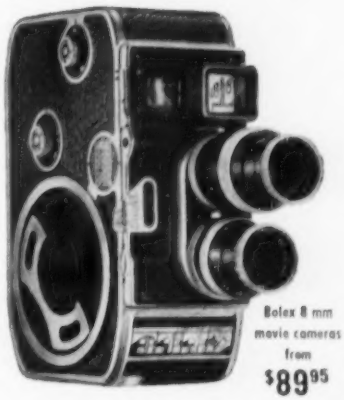

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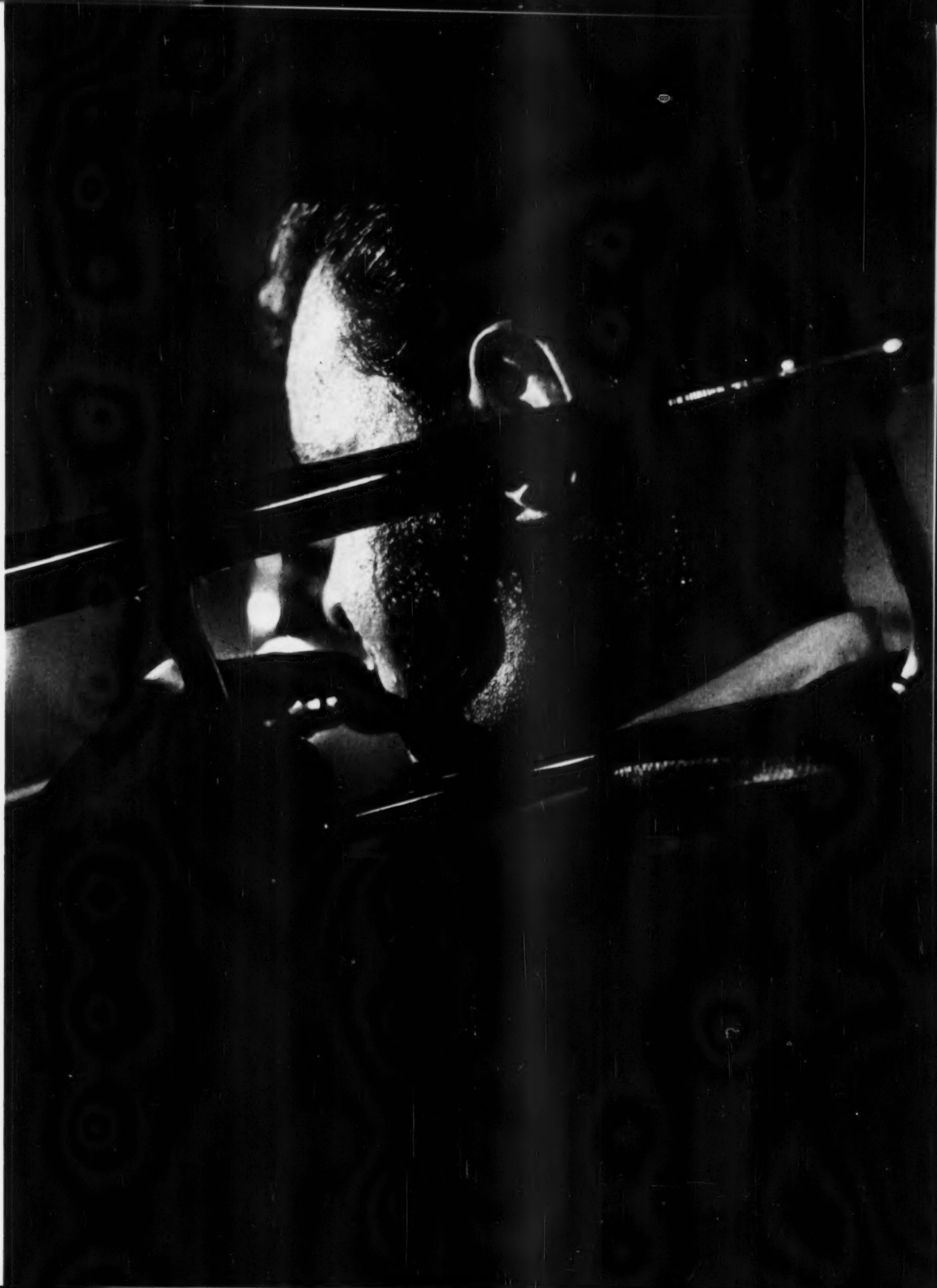
Here are 44 pages packed with ideas, techniques, new products, and good pictures to help you get the most fun from your miniature camera

35-mm

A POPULAR PHOTOGRAPHY SPECIAL ISSUE

Victor Obata



WHICH 35 – REFLEX

THE COUPLED RANGEFINDER IS FOR ME

by Bob Schwalberg

Barrett Gallagher

I'LL never forget the first time I looked through an eye-level 35-mm single-lens reflex. It was love at first squint, and I was sold on the spot, lens, mirror, and prism. Focusing directly through the lens reduced the coupled rangefinder to the level of wet plates and Waterhouse stops. The mirror image was completely free of parallax—goodbye viewfinders. This was the camera for me.

During the nine years that have slid by since my first encounter, and subsequent disenchantment, with the type of camera so ably wielded, and defended in debate, by my redoubtable friend Barrett Gallagher, I have made pictures with many single-lens-reflex miniatures. These were, I should add, cameras which were loaned to me, or which I rented. The fact that I have never purchased one of these modern marvels does not, of course, prove or indicate anything. Except, perhaps, that I am unduly parsimonious.

The most interesting effect of the coming of the prism reflex upon the 35-mm scene is the intramural partisanship which the through-the-lens boys have nurtured and thrived upon. Back in the dear old preprism days you were a Leica man or you were a Contax man. I was a Contax youth. But we never fought about it very much, and some of my best friends were Rollei men. Those happier days were made possible by the simple fact that nobody had a Message. To get down on the mat with this single-lens reflex vs. the coupled-rangefinder argument you must first grasp this truth: The prism-reflex man is Dedicated. He has seen the Future and wants you to see it too.

As a completely self-appointed defender of the coupled-rangefinder faith, or "CRF," as they spell it in the used-camera ads, it is first necessary that I clarify my stand on monolensism. *The prism-type single-lens reflex is a very useful camera design that has an important place in 35-mm today.* I spent a couple of hours over at Barrett's home recently, and the singly reflexed pictures he showed me were absolutely terrific. Therefore, let me say right at the start that in addition to being a very interesting piece of equipment, there are two kinds of pictures that the single-lens reflex does better than any other camera type. They are:

1—The long-long view.
2—The short-short view.

Rangefinders just aren't worth a speck of dust on your negative for focusing lenses longer than 135 mm. Matter of fact, that is the longest focal length now made for rangefinder coupling. In order to handle heavy artillery on a rangefinder camera (*Continued on page* 108)

OR RANGEFINDER?

Trouble deciding which to buy? Here are both sides of the question

I LIKE A SINGLE-LENS REFLEX BEST

by Barrett Gallagher

Bob Schwalberg

I HAVE been using three 35-mm single-lens-reflex cameras as my primary cameras for the last five years on all kinds of assignments—sports, people, theatre, science and industry, aircraft carriers, dancing girls. I recently bought a rangefinder camera and have been using them all side by side, so may be less prejudiced or at least less ignorant than when strictly a reflex man.

I chose the single-lens reflex because I couldn't see clearly through the viewfinders on the rangefinder cameras. Looking through the reflex lens gives you full-frame the exact parallax-free field of view of every lens, from the widest wide-angle to the longest telephoto. Even with recent great improvements, the rangefinder camera offers you a choice between the sensational new M-3-type combined viewfinder and rangefinder (for 50-mm, 85-mm, and 135-mm lenses only) which gives you smaller and smaller frames for the longer lenses, or separate rangefinder and viewfinders. Even the new Canon universal viewfinder which offers full-frame field for all lenses (Zoomar style) with a clearly seen frame—a great improvement over the old keyhole effect that made it impossible for a wearer of glasses to see the edges of the frame he was trying to compose a picture in—requires alignment of the turret corresponding to the lens in use. Enter a possibility for a drastic error. Most serious, any separate rangefinder-viewfinder system requires you to shift your eye from one peephole to another at the crucial moment, and with a moving target, you're dead.

Rangefinder accuracy falls off rapidly with telephoto lenses. With long telephoto lenses the rangefinder camera requires a bulky, clumsy reflex housing—the hard way to provide what is built into the single-lens reflex.

Sometimes I have to photograph something tiny—a dime-sized transistor, the thyroid gland's artery and nerve anatomy in the operating room. The single-lens reflex (mine are Exaktas) with extension tubes behind the lens permits focusing down to three inches or less. It is possible to photograph a dime larger than actual size so that it nearly fills the width of the frame. And there is no parallax problem. Parallax and depth of field are extremely critical close-up.

Even in normal use without extension tubes I notice that the reflex 35-mm lens will focus down to about 2½ feet versus about 3½ feet for the rangefinder; the 50-mm to 2½ feet versus 3½ feet (the rangefinder has its mechanical limits). Advantage, single-lens reflex.

I noticed recently when photographing Perry Como between the heads of TV camera operators, even with the M-3 parallax-correcting viewfinder, the two-inch difference between the viewfinder and the taking lens made a surprising difference between the picture I saw and the picture I got. In some cases Como's head which I saw centered was partly covered by one of the heads I was trying to use as a frame. The framing object also frequently blocked the rangefinder window, making focusing difficult. Very disconcerting when you're trying to catch the exact instant with a moving target. Advantage— (*Continued on page 112*)

THE VERSATILE 50-MM LENS

It is basic in the miniature camera arsenal, ideal for all normal requirements, and often a useful stopgap when long-focus and wide-angle lenses are lacking

Wide apertures of normal lenses permit difficult available-light shots like this one by Martin J. Dain, made with Leica and Sonnar f/1.5.

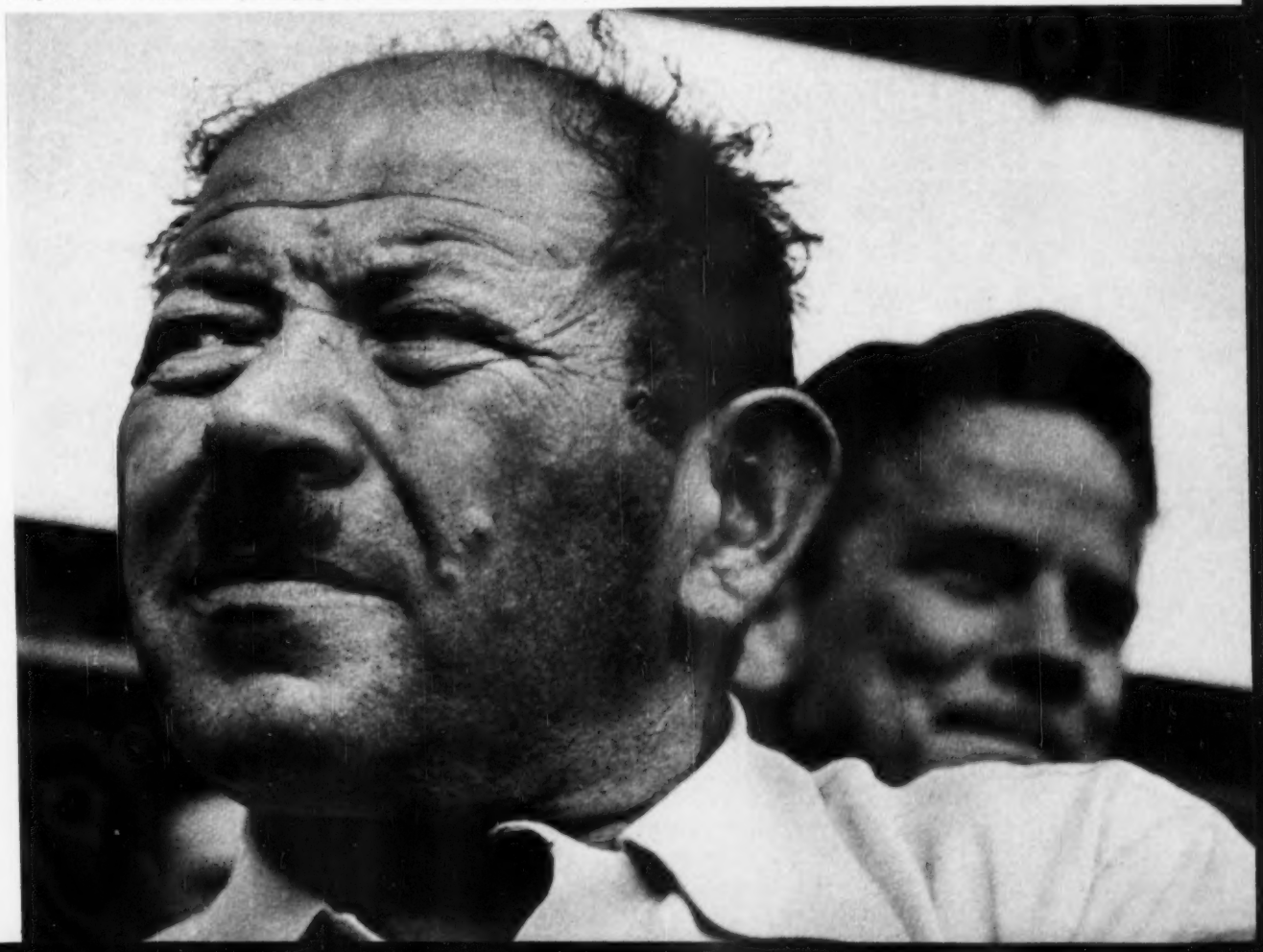
When photography graduated from the Daguerreotype, and its many successors, to the wet glass-plate negative, one of the problems that faced camera makers was the choice of focal length for the normal camera lens. The earlier cameras, working with photographic processes which did not produce negatives, were equipped with lenses of fairly long local length in order to let the photographer fill up most of his picture area. But as enlarging become more popular, the need for extreme image sizes diminished, and there was a general clamoring for portable cameras with less cumbersome optics.

A standard for the normal focal length soon gained almost rigid adherence by camera makers and was widely accepted by photographers. This standard for lens normalcy survives to this day, and consists of making the lens supplied with the camera just slightly longer than the diagonal of the negative used. This gives a picture field angle of slightly more than 45 degrees across the film diagonal, and includes a considerable amount of subject matter from reasonably close shooting distances.

In 1924, when the first 35-mm camera, Barnack's Mod- (*Continued on page* 84)

Wide-angle effect is achieved with normal lens by utilizing all the format's longest dimension to heighten feeling of space, as in Harry Lapow's shot of children playing, made with Canon camera.

Telephoto effect is simulated by enlarging very small area of negative, as Bob Schwalberg did in this picture made with Nikon, f/1.4 Nikkor lens.



WHY USE A WIDE-ANGLE LENS?

To include a broader-than-normal field of view, to contribute a sense of spaciousness, to back up in cramped areas, to get off-beat effects

WIDE-ANGLE lenses, as their name implies, are lenses which give a wider field of view than that encompassed by the normal 50-mm lens on a miniature camera. The shorter the focal length of the wide-angle lens, the greater its angle of view, and, of course, the greater the depth of field.

These two factors account for the usefulness of the wide-angle lens: The ability to see more from less distance, and to record a greater foreground-to-background range of subjects in sharp focus. These virtues pay off in many ways.

Indoors, in cramped shooting spaces, the wide-angle allows you to include space on all sides of your subject under conditions in which the 50-mm lens might crop tightly around the subject. This gives a greater opportunity to include relevant background and foreground objects which would otherwise be left out, and is the primary reason for the wide-angle's great popularity among professional news and magazine 35-mm men who must frequently cover indoor activities and events which afford a minimum opportunity to back away.

The great depth of field and increased angle of view also lend themselves to pictures in which we want to emphasize a foreground (*Continued on page* 114)

Relating subject to surroundings is a typical use of wide-angle lens. Tom Abercrombie made this shot with Leica, 35-mm Summaron.

Courtesy Life, © Time, Inc.

Great depth of field of wide-angle lens makes possible such odd effects as Grey Villet got in his photograph of candidate Estes Kefauver.

Vertical space is extended in John W. Ahlhauser's wide-angle picture of nuns on a porch; the feeling is increased by vertical cropping.

WHY USE A LONG-FOCUS LENS?

For moving in on distant subjects,

for undistorted portraiture,

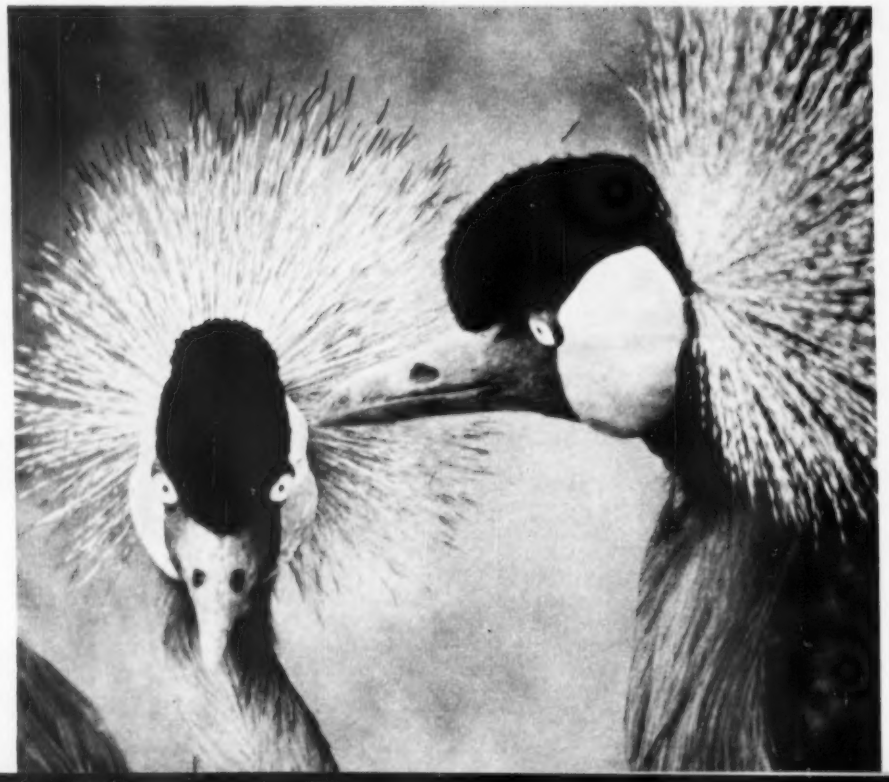
for unusual compression effects

THE long-focus lens is a photographer's answer to the problem of how to photograph from a distance and still obtain necessary image size on the negative. The adjective "long," like the "wide" in wide-angle, is used in relation to the normal 50-mm lens. Since the long-focus lens takes in less subject matter from any given distance, but spreads this over the same negative area, objects photographed with a long lens are proportionally larger than they would have been if photographed from the same distance with a shorter lens. A second characteristic of longer lens focal lengths is reduced depth of field, although this condition is much exaggerated as we shall see later.

Long-focal-length lenses for the miniature camera range from the 75- to 135-mm medium- (*Continued on page* 120)

Portraits in which a head nearly fills whole frame can be made without distortion. This close-up by Richard Philips was made with Leica, 90-mm Angenieux.

→ Wary subjects can be shot from great distances with extremely long lenses. Here Tom Abercrombie used a 500-mm Fototel on Exakta; the camera was hand-held.



Courtesy Life, © Time, Inc.

Compression of objects in depth is accomplished with very long-focus lenses, as in this picture of midtown Manhattan by Andreas Feininger.

35-MM GOES

PICTURES WERE BANNED by hospital, but John Ahlhauser hid a Nikon under his coat and shot exclusive newsphoto of relatives praying for fatally injured business and civic leader.

FOR A FEATURE STORY about a children's ward, Fred Tonne made this appealing picture of a baby being examined. He moved in close with his Leica—and shot by available light.

By BOB SCHWALBERG

TO PRESS

Milwaukee Journal's veteran lensmen ditch big cameras for news and feature stories

PRESS photography in the U. S. today is undergoing one of its much too infrequent upheavals. A 35-mm revolution that threatens to topple the 4x5 sheet-film camera from its long-time supremacy as *the* press camera, is spreading throughout the nation's picture desks. There are very few photo-conscious dailies that aren't at least experimenting with the camera that only yesterday was regarded as a toy by tradition-conscious newspaper photographers.

The prophets of this newest revolution are the pace-setting staffers of the *Milwaukee Journal*, a group long accustomed to fomenting photographic revolutions such as multiple-extension flash, the portable electronic-flash unit, and the one-shot color camera. The *Journal* pioneered, too, in making color reproduction available for ROP (run-of-press)—that is, on any page of the paper as part of its regular press run.

When a *Journal* photographer reaches for a camera today, there's an even chance it will be a 35-mm miniature. Editors and executives with whom I spoke estimated that between 30 and 40 percent of general news photos are now 35-mm. Estimates on features and Sunday-supplement pictures run as high as 70 percent.

The signifi- (*Continued on page* 126)

ROUTINE SPOT-NEWS COVERAGE with 35-mm cameras produced this shot of a fatal auto accident. Tom Abercrombie made the picture with his favorite lens, the 35-mm wide-angle, which has great depth of field at relatively large apertures. Quality of miniature pictures equals that obtainable with press cameras.

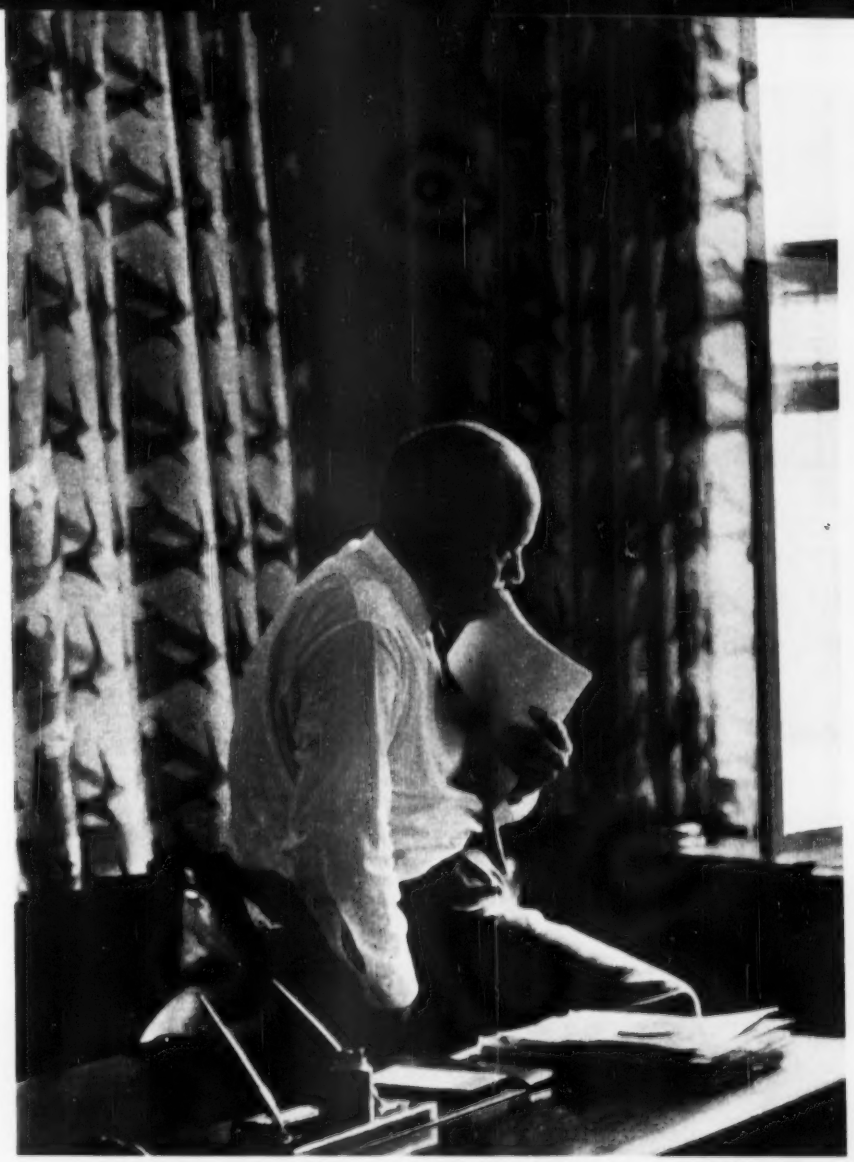
Pictures continued →

The Journal's high picture standards help develop an outstanding talent—Tom Abercrombie. Here's a six-page selection of his 35-mm press work

In Tom Abercrombie, the Milwaukee Journal *has turned up one of those rare jewels of journalism—a press photographer who uses the camera with the perceptions of an artist. Whether spot news or feature, he approaches his assignments with imagination and singular clarity of vision as the following six-page portfolio of 35-mm work shows.*

Before going to the Journal, *Abercrombie worked for a year on the daily* Fargo (N.D.) Forum. *Earlier, while attending St. Paul's Macalester College, he photographed school events for the college's Public Information department.*

DRAMATIC PICTURE of firemen battling flames that razed Catholic seminary was made with a Leica and 28-mm wide-angle lens. Abercrombie shot at f/8, 1/100.



← **SCHOOL KIDS**, reacting normally to season's first snowfall, were caught with a wide-open 35-mm lens; a fast shutter stopped snowball in flight.

→ **INTERPRETIVE** available-light portrait of business executive was made with unobtrusive 35-mm camera. It was shot with 50-mm lens on Tri-X.

→ **FOR A PHOTO STORY** about feet at the beach, Abercrombie kept his eyes down—and found this unposed shot of a youngster up to his ears in sand.

CHANGING EMOTIONS of rabid Braves fan were recorded with a tele lens. "It's much harder to get this kind of sequence with a 4x5 camera," says Abercrombie.

← **ASSIGNED** to take pictures to go with a winter-weather story, Abercrombie spotted this forlorn horse pulling an ancient wagon through bleak, deserted streets.

→ **AERIAL VIEW** makes Milwaukee County Stadium look like a jewel on black velvet. Abercrombie circled in a light plane at dusk, shot with a 50-mm lens at f/1.5.

FOCUSING WITHOUT A RANGEFINDER

You don't need a rangefinder to get sharp pictures with 35-mm cameras

DEPTH-OF-FIELD SCALE shows how much of a scene will be in sharp focus. Here camera is focused at 6 feet. If lens is opened to *f*/4, depth of field ranges from 5½ to 7 feet. If lens is stopped down to an *f*/8 opening, depth of field increases to about 5 to 8 feet.

DEPTH OF FIELD increases as the focusing distance increases. In this picture, for example, the camera is focused at about 50 feet. Even the relatively wide aperture of *f*/4 gives a depth of field ranging from infinity to 25 feet. An *f*/11 opening gives from infinity to 14 feet.

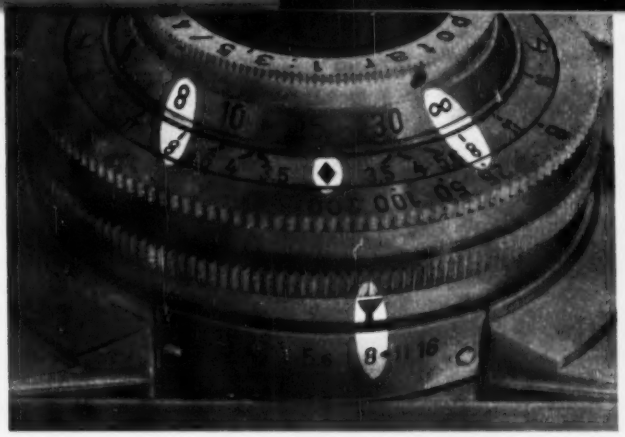
THE ability to estimate distance and utilize depth of field is a valuable skill for any photographer to develop, but especially useful for the owners of inexpensive, nonrangefinder 35-mm cameras. Many of these cameras are well made and capable of producing good-quality pictures in color or black-and-white, but they do pose a problem—how to insure sharp focus without the aid of a rangefinder. The accompanying pictures illustrate some of the simple methods you can use to solve the problem.

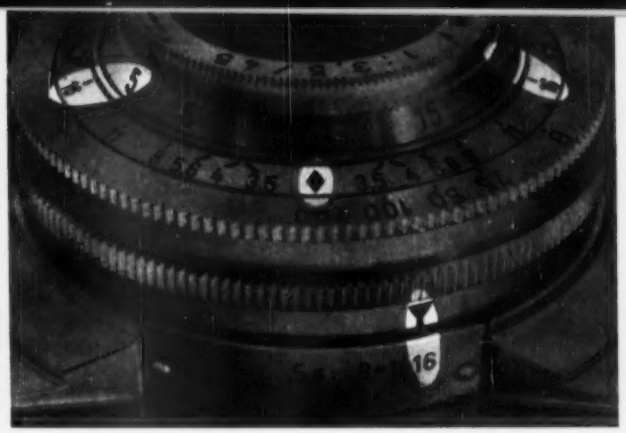
How do you find out the distance you are from the object you want to photograph? There are several methods which include guessing the distance, pacing it off, and—for accuracy when photographing close-up objects—actually measuring the distance with a tape measure or ruler.

Hold one end of the tape at the *back* of the camera, extend the other end forward till it touches the subject you wish to photograph, then read off the distance, making sure the tape is taut.

However, it is not always convenient or possible to take time to measure subject distance. Here is where a working knowledge of depth of field becomes useful.

Depth of field is simply the zone of sharp focus, the area within which all objects will produce a clear, sharp image. Objects nearer to or farther away than





HOW TO DETERMINE HYPERFOCAL DISTANCE EASILY

HYPERFOCAL DISTANCE is the near limit of the depth of field when the lens is set at infinity. Starting with the lens set at infinity simply turn the lens until the infinity mark lines up with the marking for the *f*-stop you are going to use, in this case *f*/8. Hyperfocal distance is 15 feet and depth of field extends from about 8 feet to infinity—the maximum depth at *f*/8.

ONCE YOU HAVE THE CAMERA SET at the hyperfocal distance simply leave it there and shoot as if you were using a fixed-focus box camera. In this case the camera is set at *f*/16. The hyperfocal distance is about 8½ feet and depth of field extends from about 5 feet to infinity. If subject is no closer to camera than half the hyperfocal distance you can get sharp pictures.

the limits of depth of field produce blurred, out-of-focus images.

The first thing that affects depth of field is the focal length of your camera lens. The longer the lens, the less the depth; the shorter the lens the greater the depth.

Because most nonrangefinder cameras are equipped with one lens which is not interchangeable, in most cases we must do with a fixed focal length. In the case of 35-mm cameras, the normal focal length is in the neighborhood of 45 to 50 mm, which is short enough to produce a very generous depth of field. (Cameras used in the accompanying pictures are the Ansco Memar and the Realist 35.)

The next thing that affects depth of field is the lens aperture. The rule is simple: the larger the lens aperture the less the depth of field. Thus, a 50-mm *f*/4 lens focused at 40 feet will produce a picture with sharpness from about 25 feet to infinity while simply stopping the lens to an opening of *f*/8 will bring the depth of field from 8 feet to infinity.

The last important factor that affects depth of field is the distance between the camera and the subject upon which it is focused. If you look at the pictures on these pages you will see a camera set at *f*/4 and focused at a distance of 6 feet. This results in a depth of field of from 5½ to 7 feet. The same camera focused at 40 feet gives a much greater depth of field at the same aperture—about 25 feet to infinity.

Another use (*Continued on page* 87)

WHEN YOU WANT to get closer than 3½ feet to subject you are photographing carefully slip a close-up or portrait attachment over camera lens.

TO MEASURE DISTANCE accurately place one end of tape measure onto back of camera body and touch other end to subject.

In keeping with the theme of this special issue, we present a page of

35-MM PICTURES FROM OUR READERS

made with a variety of miniature cameras in a variety of places. Here are an exotic landscape, a spectacular special effect, a quiet pastoral, a dose of humor. How do these amateur photographs stack up against your own color slides?

Eugene V. Tourville, Thornwood, N. Y. A Moslem at prayer, facing toward the holy city of Mecca, was photographed near Al Hasa in the desert of Saudi Arabia by Mr. Tourville, a professional artist who was art director for a motion picture made in that country. He carried his 35-mm Tower camera to make record shots for his files, to be used later in research and sketching. The setting sun cast long shadows across the sand, making a veritable "stage setting" for the picture. Tourville used Kodachrome Daylight Type film, and exposed at 1/60 second, f/8. The camera was equipped with a 50-mm Nikkor f/2.

Ted Streshinsky, Berkeley, Calif. This slide, presented in 35-mm mount, was actually made with two different 4x5 cameras. Fireworks were shot with Speed Graphic and 120 roll-film adapter, and Daylight Ektachrome with time exposures at f/5.6 for two bursts of rockets. Fireworks transparency was taped to groundglass of a Graflex, and camera focused on the two little heads, which were placed on a light box. With the two images registered properly, heads were photographed on Ektachrome Type B film, with floods and spots, and light box turned on to wash-out background. Two pictures were mounted together.

Flora Jane Randolph, Sausalito, Calif. Along the Mokelumne River near Lodi in her home state, Miss Randolph found these horses grazing, and photographed them with a Kodak 35 which has a 50-mm Anastar f/3.5 lens, on Kodachrome Daylight Type, with exposure of 1/50 second, f/5.6. She recalls, "I had a very hard time keeping shooting distance between the horses and myself; they were very curious, and the white one kept sniffing my nose." Miss Randolph, who is an airbrush artist and retoucher by vocation, is a graduate of the "box-camera school of photography" and an enthusiastic color amateur.

Howard E. Goldstein, Brooklyn, N. Y. On a summer outing to Jacob Riis Park on Long Island, Edith Goldstein bought a box of Cracker Jack, and volunteered to pose with the prize it contained—a pair of popeyed spectacles. Howard made the picture with a Kodak Signet which has a 50-mm Ektar f/3.5 lens, on Kodachrome Daylight Type film, with exposure of 1/100 second, f/8. The result is a rare example of camera humor. Goldstein, who is a salesman, has been an amateur photographer since he was nine, and is still "happiest when taking pictures." This was one of his early color ventures; he is now a "seasoned" amateur.

Eugene V. Tourville

Flora Jane Randolph

Ted Streshinsky

Howard E. Goldstein

35-MM AT WORK

a portfolio of outstanding pictures

THE proof of any camera's ability lies in the pictures it can produce. Judged by this criterion, the 35-mm rates as one of the most versatile and responsive picture-taking mechanisms ever devised. A glance through the photographs in this 12-page portfolio reveals an amazing range of subject matter and technique from a candid grab shot at an Easter parade to a carefully posed studio glamor picture, from blurred available-light impressions to a crisply detailed pattern shot, from intimate portraits to a sweeping panorama. Your 35-mm camera, too, can take pictures like these if you apply the instructions given elsewhere in this issue and look at the world around you with a fresh and sympathetic eye.

←
Candid portraiture, a forte of 35-mm, is not limited to black-and-white. Farmer on porch was recorded by Simpson Kalisher on Daylight Kodachrome with a Canon and 50-mm lens. Exposure: 1/25 second, *f*/2.8.

Horizontal format of narrow 35-mm frame is exploited by John G. Ross in this precisely posed picture of a Cairo lime seller. He used a Leica with a normal lens, Daylight Kodachrome, 1/50 second at *f*/5.6.

A slow shutter speed, 1/8 second, was used by David Linton to create colorful blur in experimental shot of dancer Andora Hodgin. The illumination was soft daylight from a studio skylight. Linton loaded his Nikon with Kodachrome Daylight film, set his 50-mm Nikkor lens at an aperture of f/4.

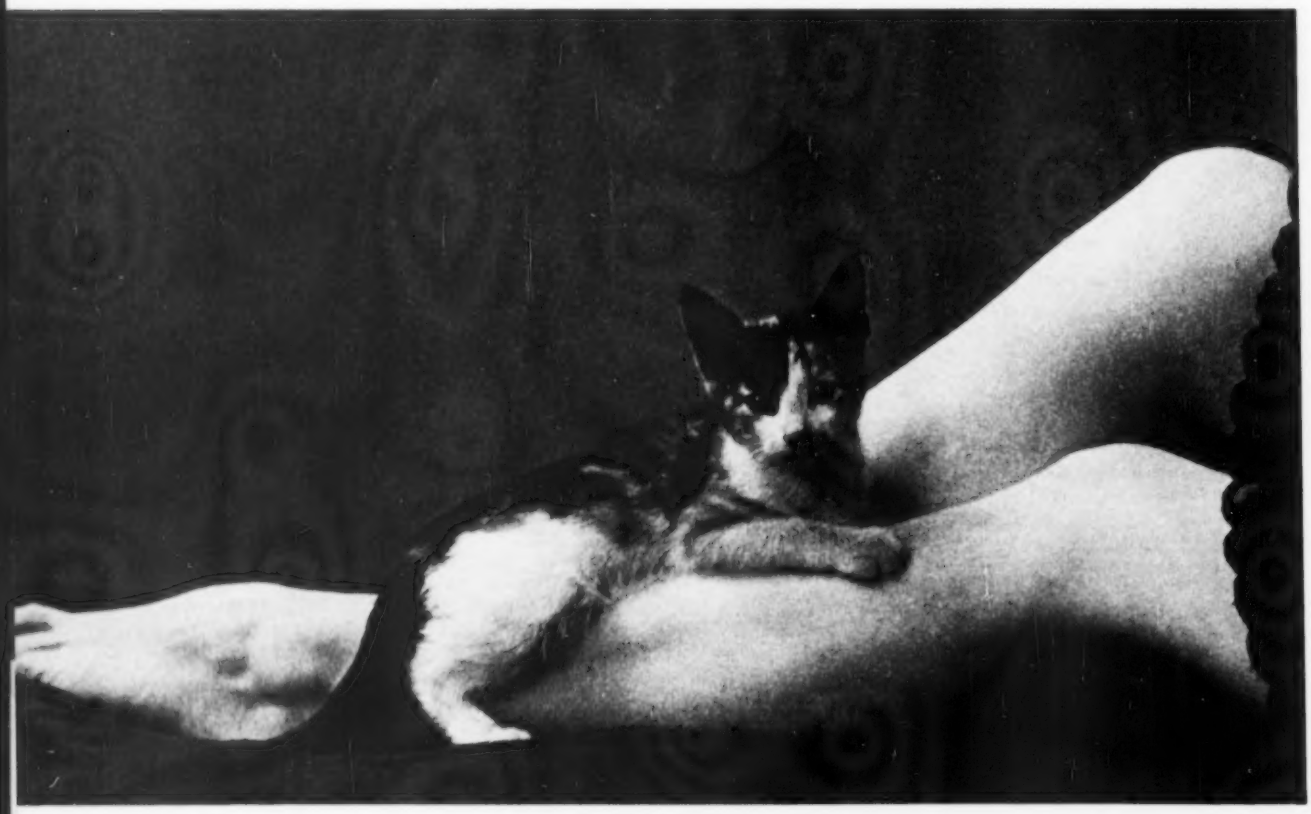
→

Fast-lens 35-mm camera excels in capturing the authentic flavor of time, place, or event. Hugh Bell recorded this happy couple by the illumination from dance-hall spotlights, exposing Tri-X for 1/100 second with his Leica's 50-mm lens open wide to f/2. Slight blur enhances the impression of swirling motion.

↑ **A sense of humor,** a quick eye, and a miniature camera make a good combination, as shown by Harry S. Lapow's amusing grab shot at an Easter parade. Canon, Super-XX, exposure: 1/100 second at f/5.6.

Calico kitten and girl's bare legs created an off-beat picture for Mike Tabb, who used window light supplemented by a single No. 2 photoflood bounced from the ceiling. He exposed Tri-X for 1/50 second at f/3.5. ↓

→ **Ballet dancer** and her son were recorded ascending stairs backstage at New York's City Center by Ann Zane as part of a picture story. She employed available light only and exposed Super-XX film for 1/25 second at f/3.5.



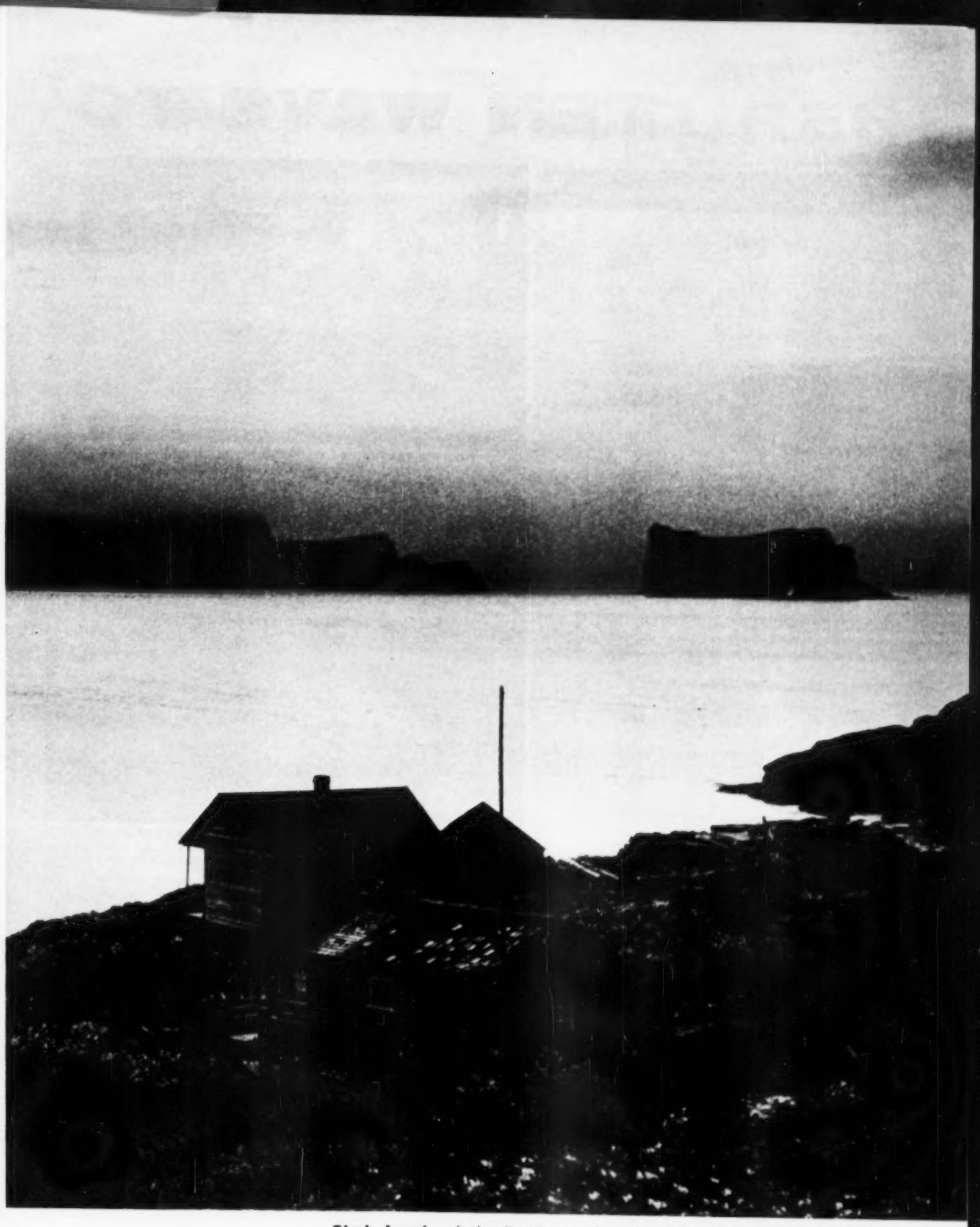
←
This gentle, wistful portrait by Staffan T. Ålander, of Sweden, typifies the miniature's use as an unobtrusive device to catch the ephemeral moods and moments of childhood. Contax, 50-mm Sonnar, Gevapan 30.

Nuns' cowls made a crisp pattern in black-and-white when recorded by *Milwaukee Journal's* John Ahlhauser with a Nikon and 135-mm lens. Versatile 35-mm is winning increasing respect as a camera for press work.

The girl in this delicate cameo-like silhouette, in case you don't recognize the classic lines of the profile, is the former Grace Kelly, photographed by Art Kane during filming of *The Swan*. Shooting directly against window light, he exposed Plus-X for 1/10 second at f/2.8 with a Contax D.

→

Glamor and cheesecake are well within the scope of the ubiquitous miniature. Girl in chair was photographed by Peter Basch with a Leica M-3 and a 50-mm lens. He used photofloods to provide the illumination, and exposed Tri-X for 1/25 sec at f/8.



Stark beauty of the Gaspé's rugged coast, shrouded by low-hanging clouds, provided Ray Jacobs with this spectacular example of 35-mm landscape photography. Using a normal lens on his Leica, he squeezed a "wide-screen" panoramic effect into the tiny dimensions of a 35-mm frame. Exposure, on Plus-X film, was 1/100 second with his lens stopped down to f/11 to keep both near and far objects in sharp focus.

TEN WAYS TO

Here are some tips to help you get the clear, finely detailed negatives so important for good 35-mm photography

Camera movement is minimized by using faster shutter speeds. Smaller cameras require higher speed than large ones. Use at least 1/100 second with 35's.

SHARPNESS is one of the basic requirements for a good photograph. There are times when a sharp picture is not desired, such as when an impression of movement has to be created, but the ability of photography to capture a clear, finely detailed image is one of the medium's unique and most valuable characteristics. Achieving sharpness is especially important in 35-mm work where a small negative, often made under unfavorable conditions, must be greatly enlarged to produce a print. The slightest loss of sharpness becomes magnified, frequently ruining what otherwise would be an excellent picture.

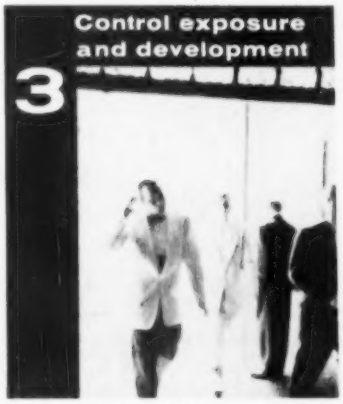
This loss of sharpness can easily occur because of various factors, often completely under the control of the cameraman. Here are some examples of defects which rob the photographer of sharp pictures. Study them and compare with your pictures to see where your work can be improved.

The first picture (Fig. 1) shows the effect of camera movement. These ghost images can be avoided by using a faster shutter speed—35-mm cameras should not be hand-held for exposures longer than $1/25$ second and $1/100$ is recommended to minimize any possibility of camera shake. When releasing the shutter, use a steady, gentle squeeze instead of sudden pressure. Practice your timing until the shutter can be released at the proper moment, instead of pressing suddenly when a picture is to be taken.

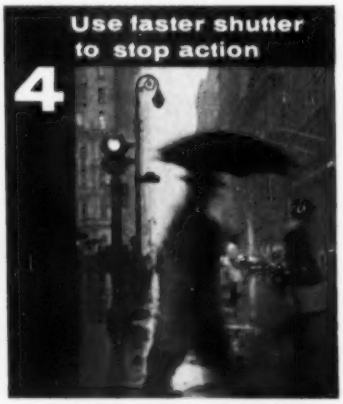
Before the widespread use of reflexes and cameras with coupled rangefinders, out-of-focus pictures (Fig. 2) were much more common than they are now, but the fault still persists. A major reason is that many (*Continued on page* 86)

Illustrations by HARVEY SHAMAN

Accurate focusing is important for 35-mm work. If camera does not have rangefinder or reflex focusing, use accessory rangefinder for precise control of sharpness.



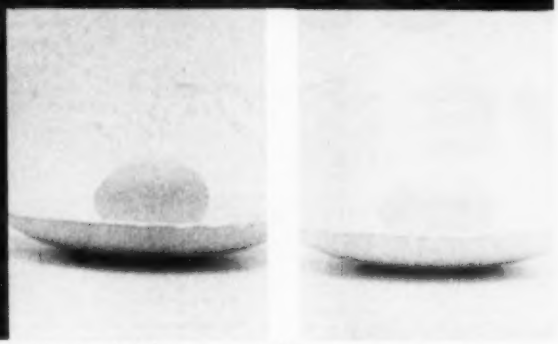
Overexposure, overdevelopment block highlights. Accurate control is the best cure.



Fast shutter speeds stop movement. Use higher speed for action at right angles to lens.

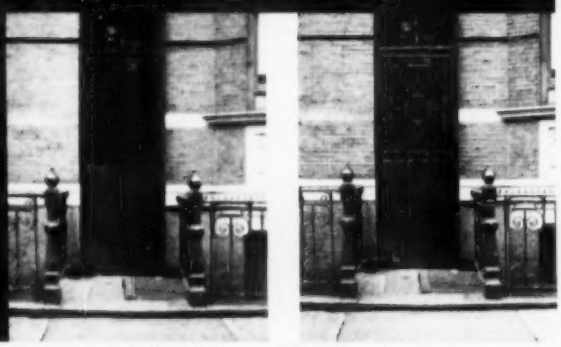
SHARPER PICTURES

5 Use fine-grain developer for detail



Delicate detail is preserved by processing in a fine-grain developer. Powerful developers give speed but increased grain causes loss of fine detail on film.

6 Focus your enlarger carefully

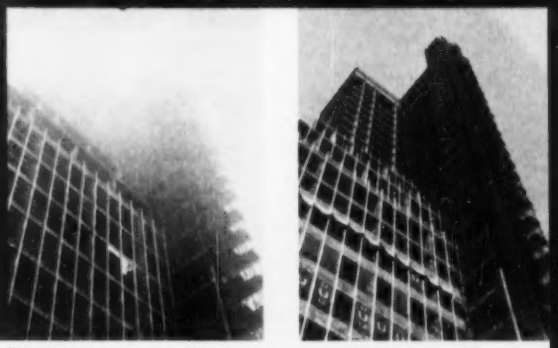


Focus carefully for sharpest possible enlargements. Use a focusing aid if necessary. Vibration is another thief of sharpness, especially during long exposures.

7 Get as close to subject as possible

Move in close to fill up the frame as much as possible, keeping down degree of enlargement needed. Loss of sharpness increases with amount of magnification.

8 Remember that haze reduces sharpness



Haze can be penetrated by using red or orange filters. Sometimes the haze present on apparently clear days is enough to degrade image when shooting distant scenes.

9 Use small aperture for maximum depth

Shallow depth of field, as at left, gives a narrow range of sharp focus. Using a smaller aperture gives over-all crispness, right, increases apparent sharpness.

10 Use contrasty light

Contrasty lighting gives illusion of sharpness. Both photos are sharp, but one on left appears sharper due to more clearly defined separation of tones, shorter scale.

A GOOD 35-MM NEGATIVE

It has all the qualities of any good negative, but its problems are magnified by its small size

By ARTHUR BARNEY

Photographs by BOB SCHWALBERG

Near-perfect 35-mm negative quality is exemplified by this available-light shot made on Plus-X exposed at an effective film speed index of ASA 400, and developed for 13 minutes in Microphen. The soft, gently penetrating quality of the existing illumination, a mixture of late-afternoon daylight and incandescent bulbs, has been recorded with extreme tonal fidelity. The hallmarks of quality observable in this negative and print are: (1) The minimum shadow density required for adequate detail and contrast, with only a few perfectly clear shadow areas; (2) Relatively few completely opaque highlight areas, with detail and gradation in all but the heaviest deposits; (3) A long scale of negative gradation between the thinnest shadow area and the heaviest highlight density, with gradation increasing gradually from almost clear to almost opaque. The result is the maximum brilliance, gradation, sharpness, and fine grain obtainable from the film, the developer, and the existing subject and lighting conditions in the scene.

A 35-mm negative is a rectangular patch measuring 24 millimeters high and 36 long on a strip of cellulose acetate, one side of which is covered by a gelatin emulsion layer. Suspended within this emulsion are millions of tiny specks of metallic silver which conform, with varying degrees of accuracy, to the optical image cast there by the camera lens, and the pattern of light and dark tonal values which existed in the original scene which it records.

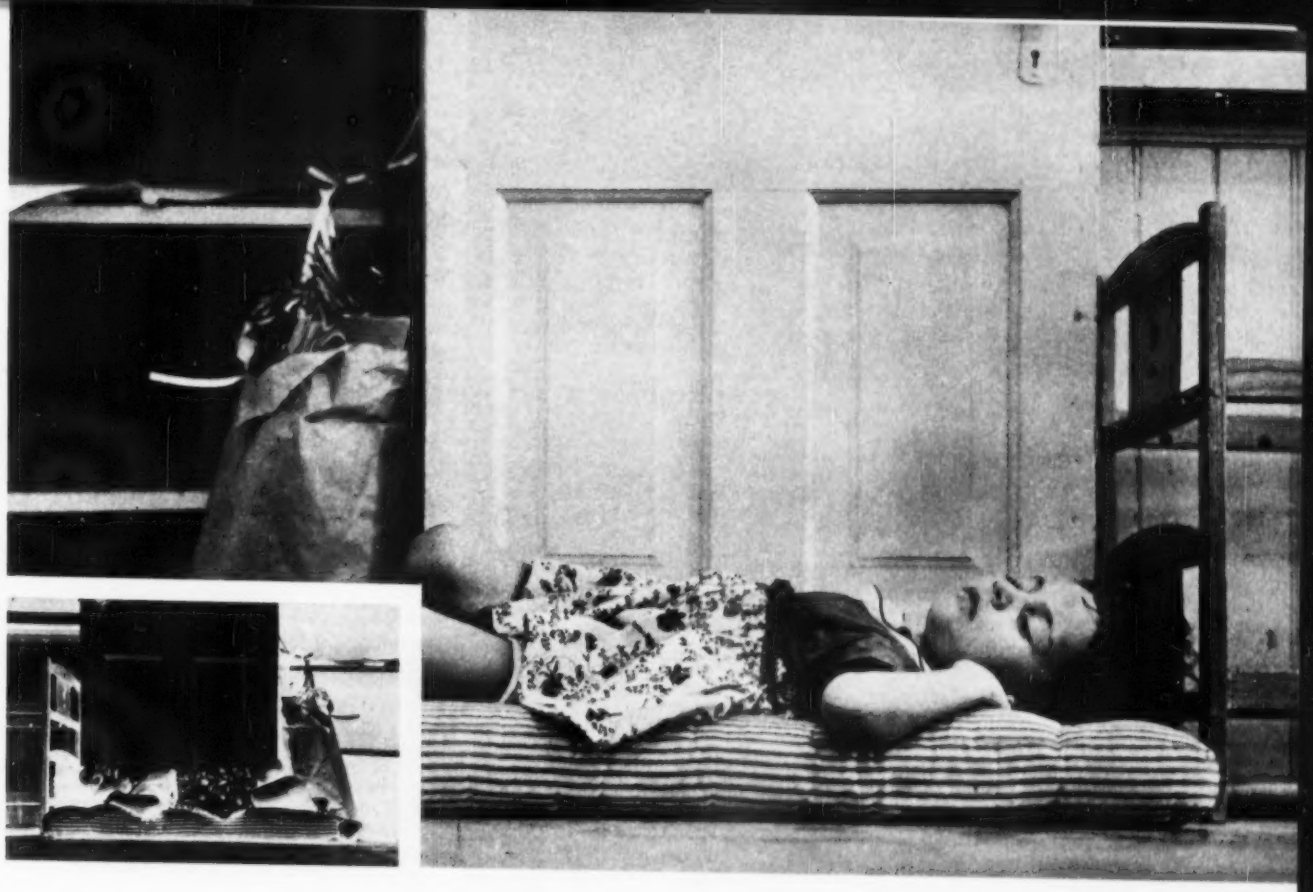
The evaluation of negative quality, once we progress beyond the stage in which we ask, "Will this produce a picture?" is very largely a subjective process in which personal preferences and prejudices play as large, or perhaps a larger part than science and technology. This evaluation can, however, be divided into three main parts:

—How accurately the silver negative image has recorded the outlines of objects in the photograph and reproduced fine image details.

—How well the light-to-dark reversed pattern of silver density has responded to the contrast of the original scene, or the interpretation of this tonality which we seek to introduce into our photograph.

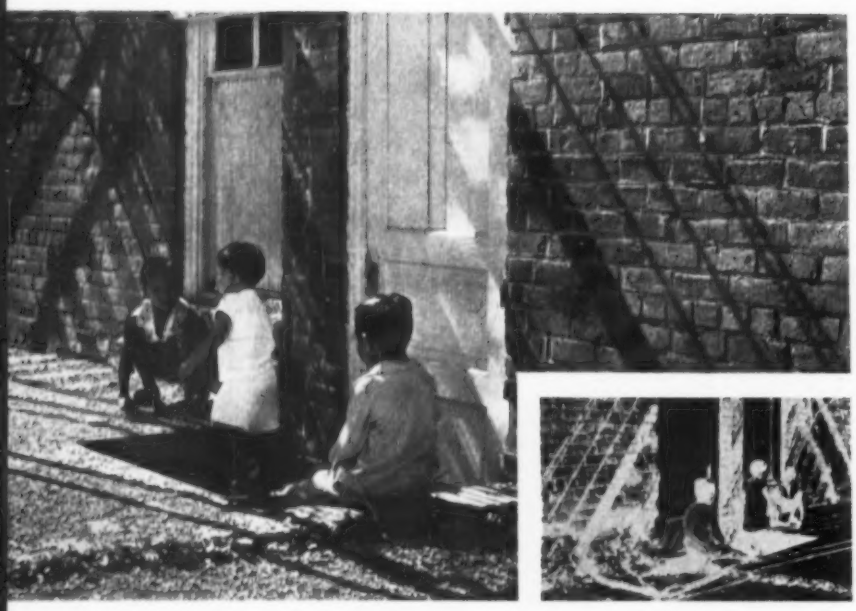
—How little the physical factors in the image, such as granularity, obtrude upon the image so as to obscure detail, distort tonality, or create other faults which injure the photographic (*Continued on page* 90)

Every exposure presents a problem. This exposure presented a problem that pops up almost every time we make pictures under dim or contrasty lighting conditions: how to obtain printable densities from poorly lighted shadow areas without producing excessive contrast. The solution to this, and many other exposure problems, is contained in two simple rules: (1) *An increase in exposure time does proportionally more to build up the shadow areas than the highlights;* (2) *An increase in development time does proportionally more to build up the highlights than the shadows.* The answer then is to give generous exposure for the shadows, and to develop no more than is necessary, to protect the highlights. In this case Plus-X was exposed at a rating of ASA 160, and developed for 12 minutes in a soft-working formula, D-23. Overexposure and underdevelopment undermines sharpness by encouraging stray light dispersion inside the emulsion (and by not developing all image-forming silver) and is best reserved for situations involving extremely high contrast



PROBLEMS continued

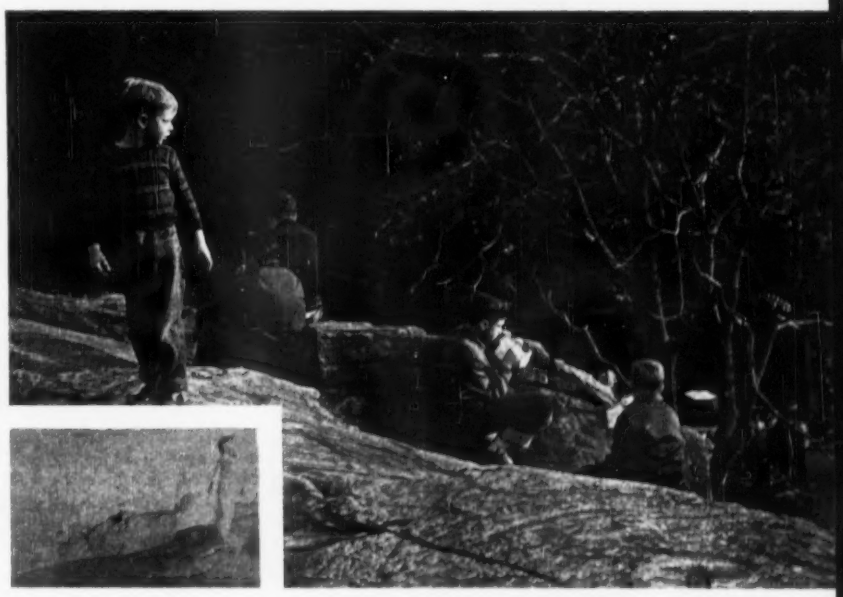
This horrible example is a demonstration of the havoc that can be wrought by senseless overdevelopment. One look at the negative reveals this interesting (and sadly commonplace) paradox: Although development has been carried to the point where the middle tones, as well as the highlights, are completely choked with unusable density, there has been no worthwhile gain in density in the shadow areas. And, because the highlights and middle tones require such a tremendous printing exposure, there is probably less *effective* shadow density than if the development had been halved. This is due to the fact that unless some fantastically fancy dodging is possible, which doesn't seem to be the case, these shadows are going to print dead black even if they were three times as heavy. A 50 percent cutback in development might have reduced the choked-up middle tones by more than 50 percent, but couldn't have lost more than 5 or 10 percent in the shadows. In addition, a number of other things have happened: Contrast is, of course, almost hopelessly high, and the grain is rough as gravel. The whole negative is blanketed by a heavy layer of fog (without which, incidentally, the contrast would have been considerably worse) and, in the black areas of the print we can see that the developer was just beginning to develop completely unexposed silver halide crystals when we finally stopped.



Maximum 35-mm image quality is a triangle whose sides are a thin-emulsion film, accurate exposure, and a compensating developer. Thin-emulsion films have microscopically fine grain, but this is only incidental to the wonders they perform. The two key factors are the thinness of the emulsion, which minimizes the number of extraneous non-image-forming crystals that are accidentally made developable by light scatter inside the emulsion during exposure, and a new criterion of sharpness called *acutance*. Acutance is the degree of contrast surrounding the outline of an image, and is a measure of the abruptness with which a film can separate tonal values. This picture was made on Adox KB-17 rated at ASA 50 and developed for 12 minutes in FR's compensating developer X-22. Accurate exposure is important because of narrow exposure latitude of thin film, and finest quality is attained with the shortest exposure giving minimum shadow density requirements. In general, people who use exposure meters properly will obtain best results with a film-speed index approximately one stop faster than the manufacturer's. See text for details.

A 35-mm negative should be only as dense as absolutely necessary, and assuming adequate shadow detail, the thinner the better. But most of us probably produce denser negatives than we really need because of our tendency to equate printability with density. This terribly underexposed negative, from a normally developed roll, may not be an example of ideal 35-mm negative density, but it does shed some light on this question. It is so thin that it is practically invisible, and this enlargement was made with the lens at f/16 and a three-second over-all exposure on No. 3 paper. Actually, it is a pretty fair print which only slightly exaggerates the low-key lighting of the original scene. If we had been working with a negative of normal density, we might have made a similar print, except for two things. The film was a very grainy European emulsion, and this frame has incredibly finer grain and sharper resolution than other negatives made at same time on this roll.

One of the most difficult technical problems in photography, preserving the soft subtlety of a very low-contrast subject without sacrificing image sharpness, was posed by this scene. A gray sky, gray rocks, gray leafless trees, and dull-colored clothing reduced the contrast to zero, and only the last faint rays of the sun, which was hidden behind a line of tall buildings, provided the faintest suggestion of contrast. To make the most of the contrast available, without completely distorting the existing tonal relationships, we decided to give a half stop less exposure than our normal practice, and increase development by about 25 percent. This brought our Panatomic-X exposure down from ASA 50 to ASA 80, and boosted the X-22 developing time from 12 to 15 minutes. The result was a roll of beautifully delicate negatives which, when printed on No. 2 paper, reproduced the original scene very faithfully. The most surprising thing, however, was this thin-emulsion film's ability to dig into flat, poorly lighted areas of the scene and produce crisp, clean sharpness.



Doubly disastrous effects of extreme overexposure and underdevelopment upon negative sharpness is illustrated by this picture from a roll that was accidentally overexposed by eight times when we forgot to close down a telephoto lens on a mirror-reflex housing by the required three f-stops before shooting. The Plus-X film was then developed by inspection in Microdol and came up dense in seven minutes. To compensate for the extreme flatness, the print was made on contrasty No. 5 paper. Even so, it's almost worthless, with little contrast and less resolution. However, small doses of approximately a stop overexposure and 30 percent underdevelopment can be a useful technique for reducing extremely harsh subject and lighting contrasts, with only a slight resultant loss of over-all image sharpness.

continued

Problem: too much contrast. Dark B-29 interior gave no meter reading, while blinding sunlight read off-scale, exceeding maximum film brightness range. Subject matter dictated preserving highlight detail. One stop overexposure and 30 percent underdevelopment gave realistic highlights plus faint shadow detail, which was held back when the enlargement was made.

Problem: too little contrast. Dim, flatly lighted room interior gave poor tonal separation. To raise contrast without blocking-up white foreground areas, exposure was reduced 50 percent and development extended 30 percent. The result gave good gradation in previously flat background, though slightly dense foreground needed burning-in on enlargement.

Problem: to preserve maximum highlight and shadow detail. Shooting into bright sky with exposure based on highlights, *Speed Drum* device gave needed boost to shadow areas without affecting highlight density. Effect of this *Speed Drum* irradiation treatment of contrasty outdoor subjects is similar to fill-in flash, though with far more realistic results.

Problem: to create minimum contrast. High contrast of glaring ripples in water was flattened out by overexposing and developing for half the normal time in developer, half the time in plain water, a procedure which enables shadow densities to catch up with the highlights.

HOW EXPOSURE AND DEVELOPMENT AFFECT NEGATIVE QUALITY

	DENSITY	CONTRAST	GRAIN	APPARENT SHARPNESS	
OVEREXPOSURE	+	−	+	−	OVEREXPOSURE increases over-all density, but is proportionally more effective in shadows, hence reduces contrast. Excessive density due to overexposure produces muddy middle tones and pasty highlights with loss of sharpness. Overexposed negatives are grainier than correctly exposed negatives given identical development.
OVERDEVELOPMENT	+	+	+	−	OVERDEVELOPMENT also increases over-all density but is proportionally more effective in highlights, thereby increasing contrast. Dense overdeveloped negatives are harsh and grainy with resolution undermined by "sandpaper" effect of grain and development of unexposed crystals adjacent to image-forming (exposed) crystals in the film emulsion.
UNDEREXPOSURE	−	+	?	?	UNDEREXPOSURE lowers over-all density and increases contrast, as loss of density is greatest in shadows. Assuming adequate shadow detail, *slight* underexposure can improve sharpness by minimizing harmful irradiation. Middle tones will print darker, masking apparent graininess, and thinner highlights will have sharper detail, better contrast.
UNDERDEVELOPMENT	−	−	−	−	UNDERDEVELOPMENT also lowers over-all density, but lowers contrast, as density loss is greatest in highlights. Pseudo-fine-grain effect is caused when part of the developable (exposed) halides in the emulsion are not reduced to metallic silver by the developer. But missing silver was part of the optical lens-image, and sharpness is badly damaged.

WHAT'S NEW IN

Ability of S-X Pan to pick up shadow detail without blocking highlights is shown in circus picture made at f/8 and 1/100 second, developed for 12 minutes in Promicrol. Photograph was made at Ringling Brothers' circus in N. Y.'s Madison Sq. Garden.

DU PONT'S S-X PAN

Du Pont S-X Pan is now available only in bulk rolls of 100 feet, right. Pictures below indicate latitude of this film under limited "available light" in boiler room lit by 60-watt bulb

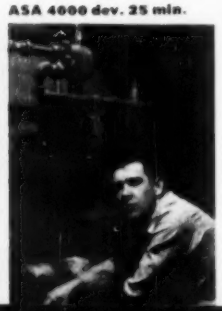
POSSIBLY the only thing faster than Du Pont's new 35-mm S-X Pan, which is nominally rated at ASA 300 daylight and 260 tungsten, is the supersonic velocity with which it has won acceptance among professional news and magazine photographers. Chief advantages offered by the new material are extraordinarily generous latitude in both exposure and development, surprisingly fine grain, increased pushability, and general willingness to do almost anything asked of it with a minimum of high-speed film temperament.

Tested intensively over a two-month period prior to press date for this issue, we pitted S-X against other American and foreign speed films with ratings from ASA 200 to 400 and kept a close watch over experience garnered by professional col- (*Continued on page* 88)

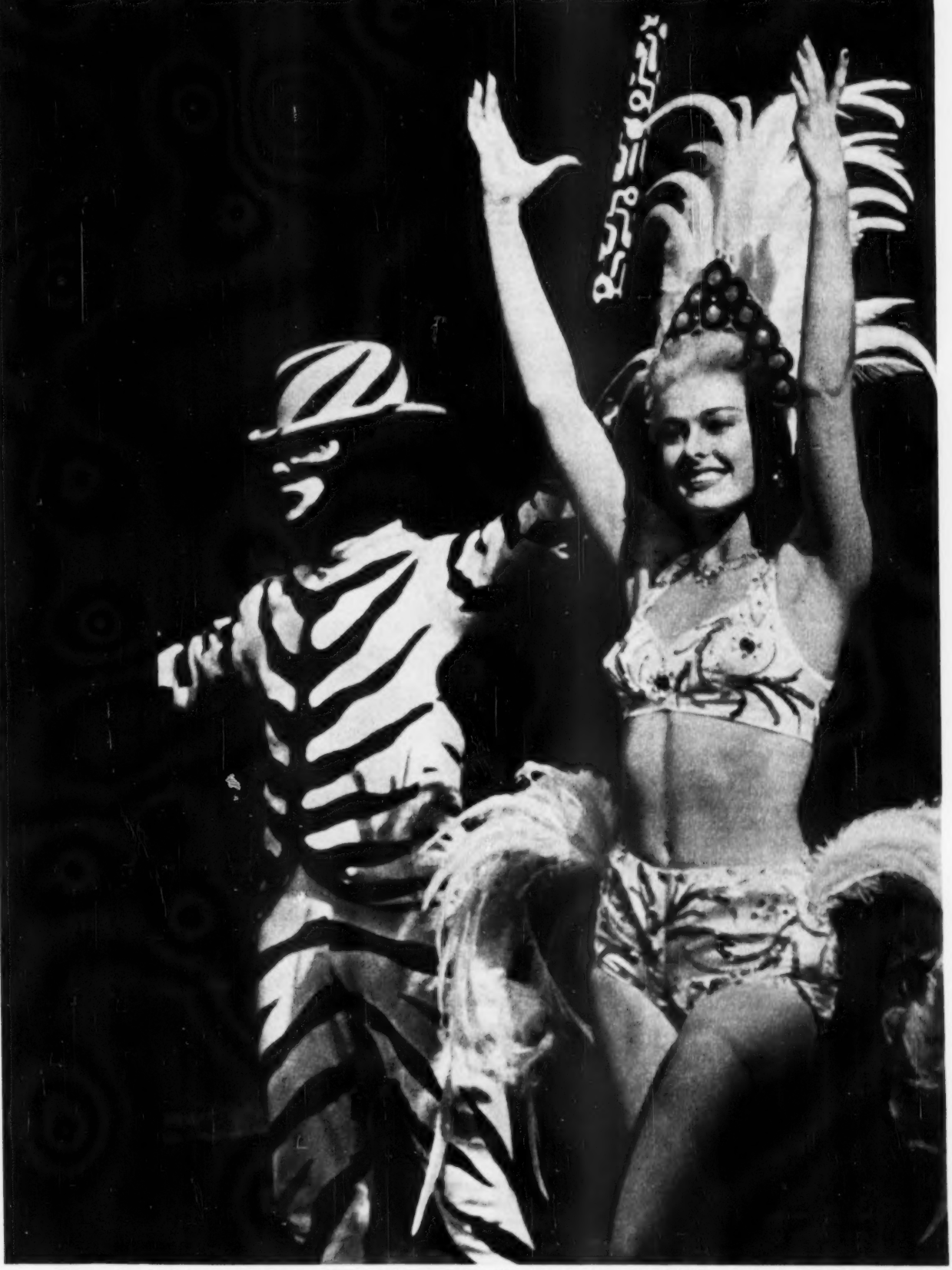
ASA 1000 dev. 12 min.

ASA 2000 dev. 25 min.

ASA 4000 dev. 25 min.



35-MM PRODUCTS



High quality of S-X Pan at ASA 1000 is shown in shot made under yellow flood at 1/100 second at f/5.6, developed 12 minutes in Premicrol.

KONICA III

Konica III with f/2 Hexanon lens and Konirapid MFX shutter. Self-timer lever is at right of lens mount and short-throw film-advance lever is at left. Shutter release is at right.

THE new Konica III is a top-quality 35-mm camera designed expressly for the person who wants a fast-working, high-precision miniature with all the features associated with the most expensive top-bracket models except for lens interchangeability. Its outstanding features include:

—an extremely sharp six-element 48-mm Hexanon f/2 lens which rivals the performance of lenses costing considerably more than the Konica itself;

—a rapid-fire finger lever which advances the film and sets the shutter in two quick strokes;

—a combined range- and viewfinder system which is the equal of some found in cameras costing three times as much;

—a nine-speed between-the-lens shutter with speeds from 1 second to 1/500 second and MFX synchronization which can handle any flash assignment;

—numerous luxury features, including a folding rewind crank which can pull the exposed film back into its cassette in less than thirty seconds, a delayed-action self-timer and a frame counter which automatically resets itself;

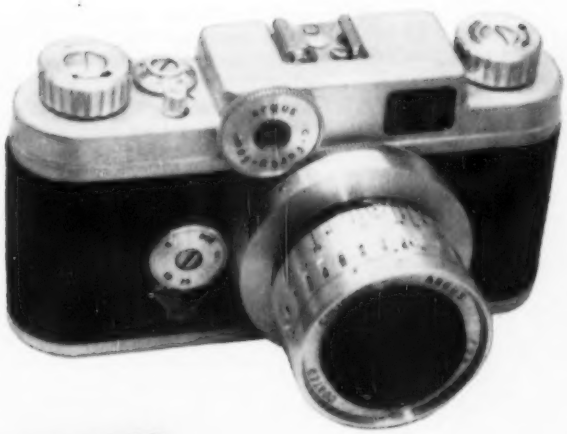
—a $119.75 price tag which should appeal to those who look upon the cost of a top-quality, interchangeable-lens miniature as being on par with a yacht.

Working with this newest Konica over a period of several weeks, we were greatly impressed by (*Continued on page* 134)

Top view shows frame counter which automatically resets itself. One eyepiece is used for combined range-viewfinder.

Rewind crank can rewind film in 30 seconds, folds down when not in use. Below is lever which cocks shutter, advances film in one operation.

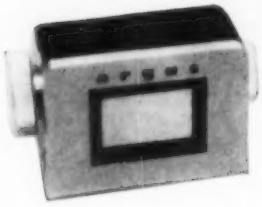
THE ARGUS C-44



100-mm Cintagon f/3.5

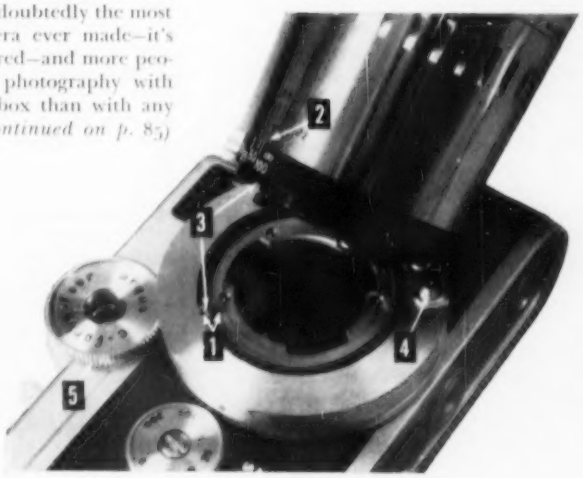
35-mm Cintagon f/4.5

The C-44 is the first camera made by Argus with truly interchangeable lenses. Normal 50-mm lens is Argus-made while 35-mm wide-angle f/4.5 and 100-mm medium-long-focus f/3.5 Cintagon lenses are made in Germany.



Variable-Power Viewfinder

Bayonet lens mount is feature of C-44. Lens is changed by 1, aligning dots on the inner and outer flanges; 2, setting the lens at infinity; 3, placing key slot on lens over key stud on mount. A one-quarter clockwise turn then locks lens in position. To remove lens, depress lens catch 4, and give lens one-quarter turn counter-clockwise. Focusing wheel 5, is coupled to mounts of all lenses.



Twenty years ago, a radio manufacturer in Ann Arbor, Michigan, introduced an entirely American-made 35-mm camera priced at $12.50. Experts had carefully explained why it was impossible to produce a miniature camera at this price, but nevertheless the first Argus arrived. An advertisement carried in the first issue of *Life* magazine, on Nov. 29, 1936, described its features as including a 50-mm triple-anastigmat f/4.5 lens, shutter speeds from 1/25 to 1/200 plus Time and Bulb, and two focusing positions labeled simply "Near," and "Far." Its arrival was heralded as "the camera sensation of the year."

Whether or not the Argus was the camera sensation of 1936, it most certainly has been the selling sensation of these past two decades, in which more Argus 35-mm cameras were sold than any other single brand. By 1938, Argus gave up radios and the model "C" was introduced with a built-in but not coupled, rangefinder. Next came the C-2, in which the rangefinder was coupled to the lens, and then the famous Argus C-3 in which flash synchronization was added. The C-3 is undoubtedly the most popular 35-mm camera ever made—it's still being manufactured—and more people associate 35-mm photography with this square-cornered box than with any other miniature. (*Continued on p. 85*)

The Kodak BULLETIN

Color Lab in a

—ideal for a vacation tour, or at home, and you don't need a darkroom. Also, the big-slide bonus that comes with every Kodaslide Signet Projector . . . High-flying color . . . How to get prints out of the wash in a hurrrry . . . Oversize full-color prints on Type C . . . Finding the right filter ring . . . And the virtue of thin film.

Big slides

Why is it that Kodaslide Signet Projectors can project the big 1½ x 1½-from-620 transparencies in 2 x 2-inch mounts without a loss in projected image quality? It's because right from the start we've put *big* condensers in the Signet Projectors to handle the big 28 x 40mm Bantam slides—not just the 35mm (24 x 36mm) slides. You get screen images that are sharp and crisp whether you use the

regular 35mm or Bantam slides or the big 1½-inch square ones. (Of course, with the larger slides, the corners are slightly rounded.)

This is a boon to the man with a 2¼ x 2¼ camera who has a yen to take color transparencies and project them. Mask the viewfinder on your camera or plan your shots so they can be cropped to 1½ x 1½ inches, mount them in suitable 2 x 2-inch slide mounts, slip them in your Kodaslide Signet Projector and you're all set for a showing of big, square, brilliant slides. (If you own an earlier model of a Signet Projector that doesn't work with the larger slide area, you can buy a Kodaslide Signet Slide Changer and Receiver Kit for $4.95 which will do the job. If your Signet has an automatic changer, you're all set as it stands.)

A Kodaslide Signet 500 Projector with automatic slide changer and a 5-inch *f*/3.5 lens costs $82.50; with 5-inch *f*/2.8 lens, $89.50; with the new 7-inch *f*/3.5 lens, $105.50; without automatic changer, $10 less. The Kodaslide Signet 300 Projector with *f*/3.5 lens and automatic changer is $69.50; without changer, $59.50.

(The film to use to make these oversized transparencies is Kodak Ektachrome Film, of course. Comes in sizes to fit 120 and 620 roll-film cameras as well as miniature. And you can process it yourself to control your own full-color transparencies from start to finish.)

New era

Ten years ago the idea of a complete color processing laboratory in a box the size of a small suitcase would have produced some loud guffaws. No longer. Witness the new Kodak Ektachrome Processing Outfit, 35mm. In one package you have everything you need to process 35mm Kodak Ektachrome Film—except a darkroom. The big news is that, with this outfit, color slide-makers don't even *need* a darkroom!

Here's what's in the outfit: A Kodak Day-Load Tank that loads in full light; a thermometer with the accuracy the process requires; a 1-pint-size Kodak Ektachrome Processing Kit, Process E-2, with all the chemicals you need; a 16-oz. Kodak Darkroom Graduate; six polyethylene storage containers with polyethylene spill-proof covers and capped pouring spouts (they're in different colors, coded to match the color-coding of the chemical packets in the Processing Kit); a Kodak Stirring Paddle, two plastic film clips, 100 Kodak Ready-Mounts, two trimming guides, four yellow polyethylene Kodaslide Boxes to hold the slides, and a complete instruction manual. Whew!

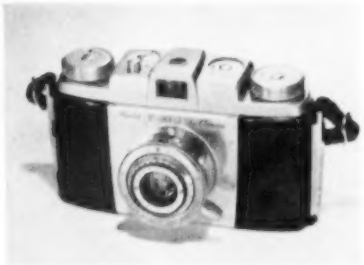
Since you don't need a darkroom, this outfit is perfect to take along on your vacation—lets you process your color transparencies the same day you take them while there's still time to take over the shots that weren't quite on the button.

Price? $24.75. Where? Your Kodak dealer's.

Just suppose

Let's say you're just starting out in serious photography on a low budget and want a moderately priced miniature camera, *or* you're looking for a second camera and want a miniature, *or* you've been asked by a friend who's a casual photographer for some advice on what camera to choose for taking color slides. Here are our specifications for such a miniature:

1. The lens to be *f*/3.5, coated, and with a high degree of image quality and color correction. And it should focus down to 2½ feet.
2. The camera won't have a rangefinder because rangefinders—good ones—aren't "low budget"; but it should have a top-quality optical viewfinder.
3. The shutter is to be at least 1/300 second and synchronized for flash.
4. The camera is to be named "Kodak Pony 135, Model C"...because then it'll have, in addition, knurled film-advance and rewind knobs, body release, film-type indicator, depth-of-field scale, tripod socket, automatic metering, exposure counter, no-thread loading, and a



price of $33.75. That's right, $33.75. Ask your Kodak dealer to show it to you. It's a lot of camera for the money.

Any size you want

Some of our friends are asking how come the new, beautiful Type C Color Print Material (for full-color prints from Kodacolor negatives) is listed only in 8 x 10 size.

Reasonable question. It's to keep Kodak dealers from going crazy stocking a wide variety of refrigerated packages while people are learning to use this wonderful new print medium. Type C must be kept cool . . . big sizes are a storage problem . . . and as yet we don't know what big sizes are going to be most in demand. We *do* know that 8 x 10 is a good

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standard size for now—and at $10.15 for a package of 25 sheets, it's very little money for some very beautiful prints.

However, you can have this material on *special* order in 11 x 14, 14 x 17, 16 x 20, 20 x 24, and 30 x 40 inches through your Kodak dealer. Only requirement is that the order be $50 list minimum in any one size. Obviously, if the members of your camera club want to do Type C prints in exhibition sizes, all you do is team up with a few other members and order $50 or more of, say, 14 x 17 . . . then divvy it up as you choose. A good club project if we ever saw one.

KAPBSF is thin

The lady in the picture is stripping an emulsion that is only 5 microns thick (a micron is 0.000039 inches). We sell this emulsion as Kodak Autoradiographic Permeable Base Stripping Film for use in microscopic study of radionuclides. The emulsion is supported by a 5-micron-thick piece of plain gelatin. This is thin—far thinner than any normal emulsion you're used to using.

There's a trend these days towards thinner emulsions in film. One of the reasons why the new micro-fine-grain Kodak Panatomic-X Film gives such high definition is because of its extra thin emulsion—the thinner the emulsion the less image spread within the emulsion during exposure. Try a roll and you'll see what we mean.

Finding the ring

An Yvar 16mm *f*/2.8 (Visifocus) lens accepts a No. 52, Series 5, Kodak Screw-in Adapter Ring, which in turn will accept no end of Kodak Filters, Portra Lenses, and the like. This is just one of about 250 lens attachments (for all manner of cameras), which appear on your Kodak dealer's newest Adapter Ring chart. See your dealer—you can determine the correct ring and series for *your* camera or lens in less time than it takes to put a filter in place.

(*That's saying something because it takes less time than ever these days to select a filter and put it in place. Kodak*

Filters now come in crystal clear plastic cases that can be locked together to form your filter kit. You can see each filter, pick the one you want, and take it out quick as a wink.)

High-flying color

A new use for the new high-speed Kodak Ektachrome Film: it's being used to photograph high-altitude rockets. For this kind of long-range work, a fine-grain high-resolution black-and-white film is usual. But somebody with an inventive mind (an amateur photographer, we bet) suggested painting the rockets with fluorescent colors, and photographing them with fine-grain, high-resolution Ektachrome. It works fine.

How to do it

It's axiomatic that a picture ought to *say* something—clearly, briskly, without beating around the bush and getting people all confused. This applies to any kind of picture—pictorial, illustrative, record, instructional. Especially instructional.

Some of our able young men have put their heads together and come up with a new 64-page book in the Kodak Industrial Handbook series. Called "How-To-Do-It Pictures," it costs 50 cents, has over 100 illustrations, and tells how to make pictures for instruction books, training and maintenance manuals, assembly instructions, and so on. Should be a gold mine for free-lance writers who'd like to illustrate their own "how-to" articles. And good training in any other photo field, too. At your Kodak dealer's.

More copies

We make a little office machine called the Kodak Verifax Copier which makes extra copies of business letters, lists, shipping documents, memoranda, certificates, and all sorts of other things—photographically and in almost no time. Very likely an office supply firm in your city sells these machines. Just recently we improved the paper used in the machine, so you can now print five or more quick copies from one paper matrix, the cost then being 2½ cents or less per copy. In a day when everybody seems to need extra copies of everything, this is progress.

Speed-up print-wash

In this fast-moving age, we think Kodak Hypo Clearing Agent is just the ticket. After a big darkroom evening, it lets you get to bed sooner and get your proper sleep. You take the print out of the hypo, dunk it briefly in water, agitate it a few minutes in the Clearing Agent bath . . . and it will then wash in about 10 minutes (20 for double-weight papers) instead of the usual one or two hours.

Kodak Hypo Clearing Agent helps films wash faster, too. And it's cheap—an 80-cent package makes 5 gallons, good for 1,000 8 x 10 prints.

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The Versatile 50-mm Lens

(*Continued from page* 41)

el A Leica, appeared on the market it was equipped with a 50-mm *f*/3.5 lens, a focal length and aperture destined to attain the status of a cliche. The 50, whose focal length is approximately ¼ of an inch shorter than the diagonal of a full-frame (24x36-mm) 35-mm negative, covers a field angle of 46 degrees. But, more important, it makes pictures.

After 30 years, and many abortive attacks upon its supremacy, the 50-mm lens is still the standard lens of the miniature camera, and more 50s are sold, and probably make more pictures, than all other focal lengths combined. Today, the only deviation from 50-millimeterism is in the low-to-medium price non-interchangeable lens field where the slightly larger angle of view and increased depth of field afforded by 45-mm lenses constitute a definite advantage.

The 50 is the miniature camera's most versatile lens. Because of the two-is-to-three 35-mm camera aspect ratio, full-frame enlargements can include a great amount of subject matter, and stepping back a foot or two can actually give a kind of wide-angle effect when the entire negative area is used in making the enlargement. A good, sharp 50-mm lens can also be pressed into service as a part-time tele-lens, and with accurate exposure and fine-grain development, images equivalent to those appearing in the 90- and 135-mm fields of view can frequently be pulled from 50-mm shots.

Over the years, countless words have been written about the special suitability of the 75- to 90-mm focal-length group for portraiture. At the same time, however, many writers have long maintained that the 50-mm is especially desirable in this field. The question really revolves around the individual interpretation of what the word "portrait" means. In the formal sense of a head, or head-and-shoulders, subject cropping, there can be little argument but that the longer-focal-length lenses are superior. Filling-up the negative area from a greater shooting distance, these lenses thereby provide the more natural perspective contributed by distance, and the size relationships between eyes, ears, and noses is more nearly correct.

To many photographers today, on the other hand, a "portrait" means a picture which relates a subject to his interests, profession, surroundings, etc., by including a judicious amount of background and/or foreground details. For example, a head, or head-and-shoulders, portrait of a famous playwright might be highly effective. But a picture of this man showing part of a rehearsal going on in the background or his cluttered work table in the foreground, would probably tell more, especially to the viewer who may be unfamiliar with the man himself. For this reason, most photojournalists strive to make "pictures of people," rather than "portraits." The 50-mm lens is especially desirable in this application because of its comfortable angle of view which is neither so wide as to dwarf the subject against a mass of extraneous material, nor so narrow as to exclude relevant material. These are, of course, generalities, but they're worth giving a try.

Another source of 50-mm popularity is lens speed, and this focal length has always led all others in relative aperture. Today, 50-mm lenses as fast as *f*/1.2 and *f*/1.1 are just now appearing on the market, and their ultimate value is still a matter of conjecture. Speeds of *f*/1.4, *f*/1.5, and *f*/2, have long been with us and have proven extremely practical. Unless you are in the darkest, blackest, dingiest location, and unless every bit of shutter speed counts because of subject movement, it is highly advisable to limit black-and-white shooting to a maximum aperture of *f*/2. The reason for our saying this is not that these lenses aren't sharp at *f*/1.4 or *f*/1.5; many are. But even assuming good defiintion at these large lens openings, there are three limiting factors which affect their usefulness.

The first of these is depth of field, a problem which becomes most serious at close shooting distances. On paper, the depth-of-field difference between *f*/1.5 and *f*/2 may not seem like very much. For instance, a 50-mm lens focused at four feet has 3½ inches of depth at *f*/1.5 and 4¾ inches at *f*/2. The difference is only an inch and a quarter, but what a difference it is! Because we're generally using stops like *f*/1.5 and *f*/2 in dim light, we have the least focusing accuracy with just those apertures which require the greatest precision in focusing. An inch of depth is mighty important when it comes to being in-focus on the eyes or not.

More important, however, is the fact that although we lose valuable depth of field, and sacrifice a measure of lens quality, the gain in light transmission is far less than it would appear to be. Theoretically, light transmission is directly proportional to the square of the numerical *f*-number. Thus, *f*/2 squares "4," and *f*/1.4 to "1.96." Therefore, *f*/1.4 (or *f*/1.5) should transmit approximately 100% more light than *f*/2. Sad to say, it doesn't, and the actual gain is closer to 50 or 60 percent than it is to 100 percent. The reason is that the more we open up the diaphragm, the more we are depending upon rays penetrating the periphery or outer edges of the lens. Such rays enter at a steeper angle of incidence than do the outermost rays utilized at smaller *f*-stops. Because of this, there is a far greater loss through internal reflection, and we encounter a sort of law of diminishing returns.

The third reason for avoiding extremely wide lens apertures whenever possible is that at apertures greater than *f*/2 it becomes increasingly necessary that exposure and development be right on the button. At *f*/1.5, a modest aperture by today's standards, as little as 50 percent (½ stop) overexposure can ruin crisp detail resolution. At *f*/2, an error of one full stop, and perhaps more, can usually be withstood without much loss of quality.

Once you cross the *f*/2 threshold, these problems cease to be of any practical importance, and most 50s will hit their optimum performance somewhere between

the third and fourth *f*-stops. Typically, a 50-mm *f*/2 might produce its best performance at *f*/4.5, or thereabouts. When we continue to stop down to very small *f*-stops, like *f*/11, *f*/16, and *f*/22, we begin to lose image quality. This occurs because of the tendency of a bundle of light rays to spread out when passing through a very narrow hole. This effect, known as diaphragm diffraction, is more pronounced in highly complex lens systems than in relatively simple formulas. And this means, of course, that relatively simple *f*/3.5 lenses will, except in a few instances, outperform speed lenses at the smallest diaphragm stops.

The 50-mm lens is the most versatile tool in any photographer's lens collection. Other focal lengths are useful, important, and sometimes indispensable. But no other focal length can by itself do all of the things that the 50 does so well.—

The Argus C-44

(Continued from page 81)

In 1951 Argus added another camera, the C-4, to their line. Aside from having a more attractive and durable die-cast metal body, the C-4 offered a slightly faster lens, an *f*/2.8 rather than an *f*/3.5, a combined rangefinder-viewfinder operating through a single eyepiece, and coupled the shutter resetting mechanism directly to the film transport.

Then an interesting thing happened. Lensmakers in Western Germany began to produce accessory wide-angle and long-focus lenses for the C-3 and C-4. These lenses, some of which sold for as little as $49.50, became an instant sensation with Argus users. There was, however, one serious area of dissatisfaction. Because neither the C-3 nor the C-4 had been designed with lens interchangeability in mind, switching from lens to lens was a cumbersome operation.

To rectify this situation and bring true lens interchangeability into the Argus picture, the new model C-44 has just been introduced, with a unique rapid-action bayonet mount, three interchangeable Cintagon lenses, a universal viewfinder, and several other new features.

The outstanding feature of the C-44 is its bayonet lens mount, which consists of a fixed inner ring with three bayonet slots, and a rotating outer ring with a key stud. To insert a lens, the red dot on this stud is brought opposite another red dot on the fixed inner ring. The lens is then set at infinity, which brings two red dots on its inner (fixed) and outer (rotating) flanges into alignment. On the outer flange of each interchangeable Cintagon there's a rectangular cut-out which fits over the key stud on the outer flange of the bayonet mount. This cutout is simply pressed against the key stud and the lens is rotated clockwise for about a quarter-turn. Once you've tried this you'll find yourself able to insert a lens in 15 or 20 seconds. Align lens-mount dots; set lens at infinity; press lens slot over mount key; quarter turn to the right and the lens is in! To remove a lens you simply set the lens at infinity, press a release catch at the bottom of the outer flange, give a quarter of a turn counter-clockwise, and the lens is in your hand!

The three interchangeable Cintagon lenses are: a new Argus-made 50-mm *f*/2.8, which has four elements instead of three as in the *f*/2.8 lenses supplied with C-4s, and two Steinheils made in Germany, a 35-mm wide-angle *f*/4.5 and a 100-mm medium-long-focus *f*/3.5 lens. These lenses, very frankly, *make* the C-44: They are very good.

The lenses are all very crisp at full aperture. All three focus smoothly with the milled wheel provided at the top of the camera. As they are focused, only the inner (black) collar rotates, so that the aperture settings and depth-of-field scale is always visible from the top of the camera. The 50-mm field provided in the built-in rangefinder-viewfinder system is excellent—as bright as life and sharp right out to the corners, even with glasses. The rangefinder image is round and has a very contrasty greenish-white tinge which makes focusing easy under very dim light levels.

The Variable-Power universal viewfinder provides field settings for the 35-, 50-, and 100-mm focal lengths on a dial mounted on the left side. A slightly larger dial on the right-hand side gives parallax settings for distances of 3, 5, 8, 15 feet, and infinity. The finder proved accurate and serviceable, although with glasses the amount of eye relief was not as great as we'd like it to be, and we did have some difficulty in seeing our corners clearly.

The shutter is a five-blade mechanism of the between-the-lens type, except that as in all Argus cameras it's mounted within the camera, about a quarter of an inch behind the lens mount. Shutter speeds are 1/10, 1/25, 1/50, 1/100, 1/300, and Bulb. These speeds checked out quite accurately, and the efficiency even at 1/300 is quite good, apparently because of a beefed-up spring which opens and closes the blades in somewhat less than the normal time. Because it's a blade type which opens completely at all exposures, the C-44 can be synchronized for class M (medium-peak) flashbulbs, as well as for "X" (zero delay) synchronization of electronic-flash units at all shutter speeds. A flip switch at the back of the camera permits the "M" and "X" settings with very legible markings. The C-44 flashgun is designed to make contact directly upon being slid into the accessory shoe, without any wires. The problem of what to do when using the Variable-Power viewfinder has been solved ingeniously by having the finder make contact for the flash gun, which is then plugged into a special bracket which is attached to the bottom of the camera by means of the tripod screw. A short wire from this bracket terminates in a small double-pronged plug which is inserted into two contact sockets provided in the left-hand side of the viewfinder, just under the field-selector wheel.

Two wide-angle and telephoto lenses both come equipped with elegant chromium-plated lens shades which serve also as filter holders for series VI filters. The front element of the American made 50-mm Cintagon *f*/2.8 is recessed approxi-

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All MINOLTA cameras and accessories are unconditionally and separately guaranteed by both the manufacturer, Chiyoda Kogaku Seiko Co. Ltd., of Osaka, Japan, and the exclusive U.S. sales agent, The FR Corporation.

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mately one half inch, and no additional lens-shade protection is necessary. A jet-black retaining ring for series V filters is part of this lens' standard equipment. All three lenses are thus set up to work with filters without any additional expense, except for the filters, of course. Our only regret is that the retaining ring on the 50-mm lens was not made large enough for Series VI filters so that one set could fit all three lenses. We did, however, see a non-Argus-made aluminum adapter ring to replace the Series V ring provided with the 50-mm Cintagon, and accept Series VI filters. And we're sure that those enterprising fellows, Messrs. Ednalite, Enteco, and Tiffen, will soon have such rings available, if they haven't already.

In using the C-44 under good and bad conditions, there were things about the camera that we liked, and, of course, things that we didn't like. We liked the lenses, both for their optical qualities and their superb mounts. The milled-wheel focusing system moved smoothly and effortlessly under the prodding of the second finger of the right hand, while the index finger rested on the crisp body-release button so that we could continually focus and still were ready to trip the shutter at the instant we wanted. The rangefinder proved excellent, actually easier to use in dim light than those provided on some cameras costing three or four times as much. Mechanically, every feature from the excellent bayonet lens mount to the removable back, proved rugged and reliable.—

10 Ways to Sharper Pictures

(Continued from page 70)

people do not focus carefully enough, making sure that the subject is sharp. When using a camera without built-in focusing devices, use an accessory rangefinder or measure subject-to-camera distance carefully. (See *Focusing Without a Rangefinder* elsewhere in this issue for details on using this type of camera.)

Washed-out highlights (Fig. 3) are becoming more common with the growth of "available light" photography where the natural tendency to give full exposure, coupled with superspeed film and a desire to add "one or two minutes to the developing time just for luck" results in extreme overexposure. Highlights are blocked so completely that they disappear, destroying detail and resolution. The remedy is careful control of exposure and processing, including light readings to measure exposure plus time-temperature control or inspection development.

This blur (Fig. 4) is the result of using too slow a shutter speed to stop motion. In this case, a speed of 1/25 second was used where at least 1/100 second was needed. Unless you are after a special effect, blurred figures do not contribute to the appeal of your photographs.

Another example of how processing affects sharpness is the egg picture (Fig. 5). The photograph on the right was developed in a fine-grain developer which preserved the delicate high-key effect. The one on the left was virtually boiled in a high-powered formula normally used for

press development. Unless you need maximum speed, use fine-grain or semi-fine-grain developers wherever possible. (For information on processing, see *A Good 35-mm Negative* elsewhere in this issue.)

Enlarging presents another problem in maintaining sharpness (Fig. 6) which can be lost from faulty focusing or vibration. In this example, the enlarger was improperly focused. The use of a focusing magnifier would help, particularly when enlarging a dense negative or one without clearly defined detail.

Subject-to-camera distance also can affect sharpness. Fig. 7 shows what happens when you try to make the enlarger cross the street instead of moving your camera closer to your subject. The picture on the right was made from a close camera position; that on the left was enlarged to give equal image size. Note the loss of critical sharpness because of the magnification required. Move in as close as practicable to your subject to fill the frame as much as possible.

A secondary reason for avoiding extreme distances is that normal lenses on 35-mm cameras are most highly corrected for middle distances, from about six to twenty feet. The resolution falls off somewhat at very close or very long distances.

The atmosphere can play funny tricks on even the best-corrected lenses (Fig. 8). Here there was a slight haze but the eye could penetrate it. The camera could not. As a result, the top of the building begins to disappear into the mist. Another atmospheric robber of sharpness is heat waves, especially when using long focus lenses for distance shots. Using a red or orange filter would help, but sometimes it is easier to come back another day, which is what this photographer did.

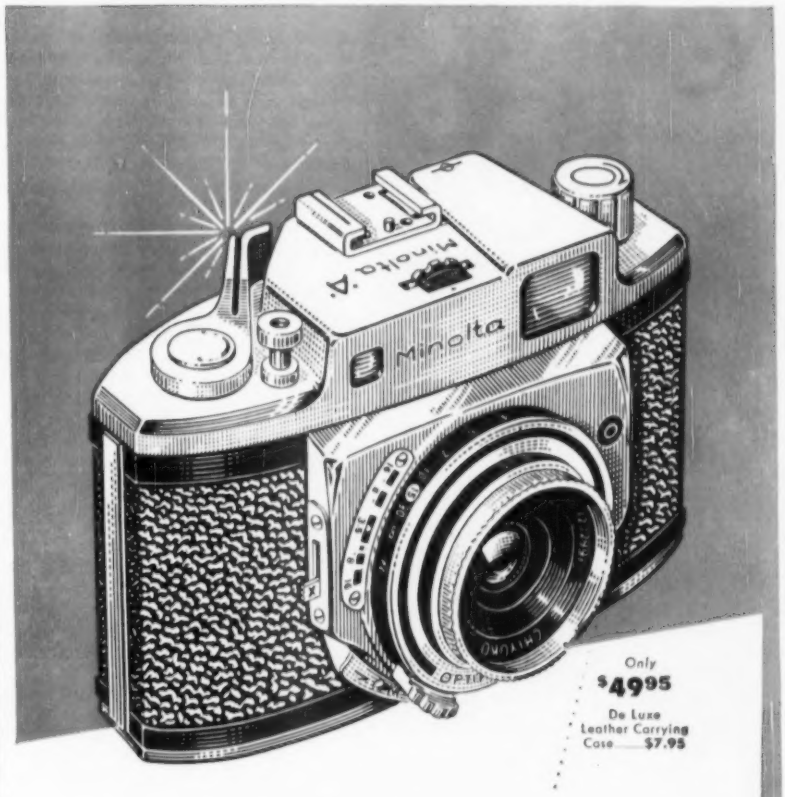
Depth of field (Fig. 9) is a case of *apparent* sharpness rather than actual sharpness. Both pictures are equally sharp at the point of focus, but sharpness falls away rapidly in the picture on the left whereas the one on the right appears to be equally sharp from foreground to background. Depth of field depends both upon aperture (increasing with small apertures) and distance focused (increasing with the distance).

Lighting (Fig. 10) is another factor affecting apparent sharpness. The photograph made with contrasty lighting, left, appears to be sharper than the one made with flat lighting, right. The increased contrast between the light and dark areas keeps the eye from wandering by making the border area appear more clearly defined.—*Harold O. Rosenzweig*

Focusing Without a Rangefinder

(*Continued from page* 55)

of depth of field involves *hyperfocal distance*, an impressive technical term which really is not as complicated as it sounds. Its use can be extremely helpful to the photographer who shoots without a rangefinder and wants as much depth of field as possible in order to



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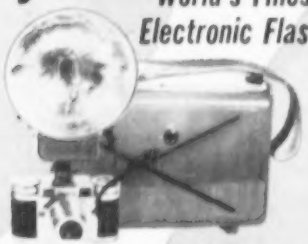

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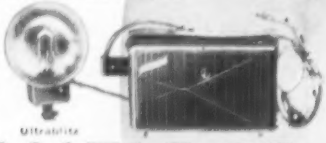

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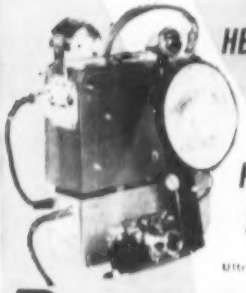

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insure sharp pictures. Hyperfocal distance is the near limit of the depth of field when the lens is set at infinity. If instead of focusing on infinity we focus upon the hyperfocal distance we get a depth of field extending from one half the hyperfocal distance to infinity. This is the maximum depth possible at any given aperture.

Of course there is a different hyperfocal distance for every aperture of your lens, since depth of field changes with the *f*-stop employed. You can attempt to memorize the various hyperfocal distances for your cameras or carry with you a chart of hyperfocal distances. But there is a quicker way if your camera is equipped with a depth-of-field scale.

Here's the short cut to finding hyperfocal distance. *Starting with the lens set at infinity simply turn the lens until the infinity mark lines up with the marking for the f-stop you are going to use.*

Once you have the camera set at the hyperfocal distance simply leave it there and shoot as if you were using a fixed-focus box camera. You can shoot with complete freedom and always get reasonably sharp pictures just so long as your subject is closer to the camera than half the hyperfocal distance.

Sometimes, however, it is not advisable to use the hyperfocal distance. For example, with your lens set at *f*/8 and focused upon the hyperfocal distance (by setting the infinity mark opposite the *f*/8 mark on the depth-of-field scale) the average nonrangefinder camera will be in focus from approximately 8 feet to infinity. But if we are photographing things at about 10 feet from the camera, and set the distance scale at 10 feet we will be in focus from approximately 6 to 16 feet. When photographing objects at a relatively close distance this belt of sharpness may be more desirable than the 8-feet-to-infinity we had with the hyperfocal distance.

Most cameras have footage scales that range from 3½ feet to infinity. If you want to get closer to your subject use a portrait attachment which fits securely over your camera lens. When you use your camera at this close range be sure that you measure the distance carefully.

Another solution for accurate measurement is to use a detachable range-

Inexpensive accessory rangefinders are available for nonrangefinder 35-mm cameras and fit the accessory shoe. Estimate distances and check your judgment with the rangefinder.

finder, which can be purchased for as little as $2.95 (see the 1956 Photography Directory and Buying Guide for a complete list of rangefinders).

The detachable rangefinder can be slipped into the accessory shoe of the camera or used hand-held.

If you use an accessory rangefinder, measure the distance to your main subject and set this on the camera's distance scale.

The rangefinder has another application. By separately measuring the distance to the nearest and farthest things that you want sharp in the picture, you can immediately see how much depth of field you need. By consulting the depth-of-field table you can determine the largest lens opening which will cover this depth.

Focusing without a rangefinder demands attention to depth of field, hyperfocal distance and the careful use of a tape measure. These can be your tools for proper use of nonrangefinder 35-mm cameras.—

Du Pont's S-X Pan

(*Continued from page 78*)

leagues. And this is what we found:

With equal exposure and development given S-X and Tri-X, the Du Pont contender presented a deceptively thin-appearing negative. However, when printed with a condenser enlarger on No. 2 paper with no burning-in or holding-back, S-X produced equal shadow density, increased shadow contrast, less density and better detail in the brightest highlights, and a tighter grain pattern. The difference was only in the over-all enlarger exposures required, which were 50 to 75 percent less with S-X as compared to Tri-X.

Normal full development for 12 minutes in D-76, 12 to 16 minutes in Promicrol, and 14 to 16 minutes in Microphen gave an absolutely reliable S-X rating of ASA 1,000, and indicated that without forcing S-X is anywhere from ½ to one full stop faster than other high-speed films. Immersion times of 12 to 15 minutes in D-23 and 4 to 6 minutes in Ethol UFG gave excellent results on exposures pegged between ASA 500 and 650.

Increasing D-76, Promicrol, and Microphen times to between 50 and 100 percent pulled in exposures based on ratings from ASA 2,000 to 3,000 without any tremendous increase in grain, and only slight increase in over-all highlight-to-shadow contrast, even where illumination levels were very low and subject contrast very high. In Promicrol, for example, there was very little difference between ASA 1,000 exposures developed for 12 minutes and ASA 2,000 exposures developed for 25 minutes, twice normal time.

Of great importance, and practical value, is S-X's willingness to forgive overexposures of up to about two *f*-stops, and to balance daylight exposures and available-light shots with the same developing time for both. S-X may not be the ideal film for outdoor sunlight shooting, but it is very clearly the *least-bad* high-speed film we've yet tested under daylight shooting conditions.

Shooting at the Ringling Brothers Circus in New York's Madison Square Garden, we used a basic exposure of 1/100 at *f*/4 for generally illuminated subjects not hit by heavy spotlights, and dropped down to *f*/8 and even *f*/11 for spotlighted

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performers. Photographing elephants at ringside where there was very little light, we obtained perfect detail and texture in their dark gray hides with 1/25 at *f*/2.8. Turning to a well-illuminated dance group we forgot to switch back to 1/100 at *f*/4, and thus overexposed three stops, or eight times our intended exposure. The result, with 12-minute development: a very dense negative, but with printable contrast and usable grain.

Milwaukee Journal photographers have already made S-X shots at ASA 2,000 which have reproduced in the paper. In New York a magazine man we know used an estimated film-speed rating of ASA 4,000 to photograph a particularly difficult available-light situation involving a lot of moving subjects. Called away from the darkroom he forgot that several rolls were still in the developing tank, and frantically fixed the film after an accidental 55-minute immersion in Promicrol. Although the excessive immersion time did no good to the film, it is most significant that it didn't do very much damage, and the negatives printed fairly well. Any other high-speed film would have blocked-up the highlights from here to high heaven, with grain the size of sprocket-holes.

Although our short test series with electronic flash was far from conclusive, they do seem to indicate that this film was designed primarily for use with fairly long exposures, up to about 1/300 sec. Pitted against other films with several different speedlight units, the S-X negatives seemed to lack sufficient contrast, particularly in the darker middle-tone and shadow areas. We are now attempting to discover how much can be restored by additional or even different development, and will report on this as soon as possible. One thing is certain, however, and that is the advisability of making a guide-number test with S-X before exposing important pictures.

The only real problem in processing S-X is its tendency to curl along the short side of the film and even to form cylinders in which the opposite rows of perforation holes meet and overlap. This can be minimized, we finally learned after much trial and error, by warming up a homemade film-drying cabinet for thirty minutes with a small heater fan. After a dip in wetting-agent solution, the films are hung without sponging, and the heat is turned off so that the fan starts to blow cold air. Drying takes about twenty minutes, and results are fairly good. Curled film can be straightened out by rewinding, emulsion side out, on a Nikor film reel or cut into strips and pressed under weight.

The film base being currently used is *not* Du Pont's revolutionary Cronar polyester base. Asked why not, Du Pont technical representatives stated that the current demand for Cronarized products exceeds their present production capacity, and that S-X will have to wait its turn. Cronar is a thin, exceptionally tough, clear film base which is 35 percent thinner than conventional film bases. This will, incidentally, permit 50-exposure cartridges with the same diameter as conventional 36-exposure loads and will,

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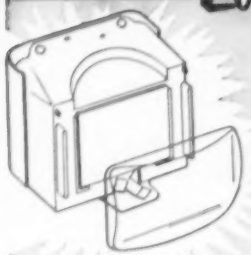

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we predict, lead to eventual production of developing reels to handle the 35 percent longer film lengths and recalibration of camera exposure counters which now generally run to 40.

The emulsions we tested varied only in the color of the film base, which was decidedly blue in the earlier batches, distinctly grayish in later samples. Tests did not seem to indicate any real difference in printability of the two film-base colorations, although we suspect that the latest emulsions are somewhat less anxious to curl up around themselves.

S-X Pan is now available only in 100-foot bulk lengths. The price is $6.15, and the film can be ordered from any dealer. At present the film is not frame-numbered, but we are assured that this will be rectified as soon as possible.—▶

A Good 35-mm Negative

(*Continued from page* 72)

effect desired in a particular situation.

That millions of grains of silver crowded into a slender layer of animal gelatin can provide any representation of nature is the miracle of photography. That they can do it with such astounding accuracy, such attention to the finest image details, and tonal fidelity, within the confines of a 35-mm negative, is the modern miracle of the miniature camera.

The struggle for 35-mm negative quality is a contest between emulsion speed and image quality. Today this contest exists for use in the form of three possible compromise solutions: The superfast film of reasonable graininess and moderate sharpness; the medium-speed film giving fine grain and good sharpness; the very slow thin-emulsion film of superfine grain and fantastic sharpness. These films share the same technological heritage and obey the same basic principles in their behavior. The most basic of these principles is that what they produce depends upon the exposure and development techniques imposed upon them by the photographer.

The problems and principles involved in black-and-white negative quality are the same for all film formats, varying only in degree. But because the 35-mm negative has so much less area than the cameras of larger format, against which it competes so successfully, the problems are that much tougher. These problems all stem from the obvious fact that 35-mm negatives have to be enlarged much further than larger negatives to produce prints of the same basic dimensions. Because we are producing negatives intended for enlargement, let's see what effects this has on negative quality requirements.

Enlarging has three major effects upon photographic image quality, all of them detrimental. They are (1) the increasing of effective contrast, (2) the reducing of apparent image sharpness, and (3) the emphasizing of graininess and other negative defects such as dust, pinholes, scratches, etc. The 4x5 sheet-film user generally make two- to five-diameter enlargements. He can, therefore, tolerate a comfortable amount of grain, needs only a reasonably sharp image, and makes a dense, contrasty negative

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which prints wonderfully well on standard paper contrast grades. The 35-mm photographer is, as all of us have doubtless learned, not quite so fortunate. We need very fine-grain negatives with etched-on image sharpness and low-to-medium contrast, in order that our efforts should begin to approximate the print quality of the larger camera.

The single most important requirement for 35-mm negative quality is sharpness. Aside from the quality of the lens and camera, and the skill with which they are employed, three very important factors determine the sharpness of our negatives. These are (1) the type of film used, (2) the kind of exposure given, (3) the development technique involved.

Thanks very largely to the Europeans who are meticulous about such things, we now have the thin-emulsion films which have done so much both to raise technical standards in 35-mm work and to teach us some facts about photographic image quality which were really not very well understood before their arrival. The supersharpness of thin-emulsion films derives from two very important characteristics of thinness in the emulsion layer, and is only incidentally related to their microscopically fine grain. Actually, the relationship between fine grain and image sharpness has long been overexaggerated, and although extremely course grain can destroy image sharpness, extremely fine grain may actually serve to reduce sharpness. But more about this later.

The first characteristic of thin film emulsions is to minimize the diffusion of light rays within the emulsion during exposure. (*See diagram 1.*) Ideally, light rays brought to focus on the front surface of the film emulsion should form tiny dots or points which cause only those light-sensitive silver-halide crystals covered by these image points to become developable. What really happens, however, is that the light rays penetrate deep into the emulsion and cause extraneous crystals of photosensitive halide to become developable along the image-forming silver on the surface of the film. The effect is to considerably enlarge and distort the size and shape of the individual image points formed by the precisely focused light rays coming from the lens. The possible harm from this stray diffusion of light rays within the emulsion is greatly minimized by a thin emulsion layer.

The second thin-emulsion characteristic which enhances the feeling of sharpness which we experience when we examine a print made from one of these thin-film negatives is a quality called *acutance* in the United States, and *contour sharpness* in Europe. Acutance is the degree of contrast surrounding the outline of an image. High acutance means that we can readily distinguish the borders of an image from its surroundings, even when the tonal contrast between the image and the background was very low in the original scene. The more abruptly a film can separate such tonal values, the higher the acutance and the sharper the picture.

The third, and as we stated previously, incidental property of thin film emulsions is to minimize graininess. Graininess consists of two factors, the size of the individual grain particles, and the amount of clumping-up of adjacent grains which occurs when the film is developed. The fine-grain characteristics of thin-emulsions stems from the inherently small particles of light-sensitive halides employed, as well as the decrease in clumping which is effected by a surface exposure in which there is a minimum of irradiated crystals inside the emulsion layer. Insofar as these fine-grain characteristics do not reduce acutance by blurring the edges of our images, it is highly desirable. When this does occur it is entirely due to faulty development practices, and not to the inherent fine-grain characteristics of the film.

Exposure is the second key to negative sharpness. Here the danger stems primarily from overexposure, which encourages additional irradiation of particles within the emulsion which have nothing whatever to do with the image points resolved by the camera lens. The tendency of overexposure to cause the irradiation of silver particles surrounding highly illuminated objects, in addition to its effective reduction of contrast, further diminishes the acutance potential of the film. The best over-all negative sharpness will always be achieved by the minimum exposure which is just sity. If we give additional exposure we sufficient to hold minimum shadow densacrifice sharpness by increasing diffusion of light rays within the emulsion and decrease the outline contrast of images within the picture. If we define "correct" exposure as this minimum exposure necessary to hold shadow density, then we can define "overexposure" as an exposure resulting in more shadow density than is required, and "underexposure" as an exposure involving a loss of required shadow density. In some cases, subject matter or a desired pictorial effect may lend itself to an exposure which does sacrifice some amount of shadow detail within the picture. The effect of this underexposure is markedly to enhance the appearance of sharpness in the middle-tone and highlight areas, and when employed under appropriate circumstances this is a most effective technique. Really fine examples of this approach are evident in the large-camera portraits of Yousuf Karsh and Philippe Halsman, both of whom are far less interested in recording detail and texture in their subjects' clothing and other dark objects in the picture than they are in producing technically perfect skin textures.

The third key to negative sharpness is development. This is a more complex part of the problem because it involves two distinct questions: (1) How long should we develop?, and (2) What *kind* of developer should we use?

"Correct," "over-," and "under-," development may be defined in much the same way as we have defined the three basic types of exposure. However, because development exercises the primary control over negative contrast, the required minimum contrast thus enters

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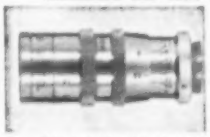

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our definition. "Correct" development would then involve the amount of development which would yield the minimum amounts of required shadow density and over-all contrast. "Overdevelopment" then becomes an amount of development resulting in excessive shadow density and over-all contrast, and "underdevelopment" an immersion period resulting in a loss of required shadow density and/or contrast.

Overdevelopment is probably the single most prevalent cause for sacrificing negative sharpness. There are three phases in this destructive process. In phase one we progress from having developed all of the image-forming silver within the emulsion to developing all of the non-image-forming, extraneously irradiated particles which results in enlarging and distorting the shape of individual optical image points. In phase two we blanket the negative with fog which adds additional non-image-forming silver to the developed image and reduces contrast. At the same time we cause additional clumping action between adjacent particles. In the third and final phase of overdevelopment, we begin to develop grains of silver which were never touched by exposure, either directly from the lens or indirectly through image irradiation.

Underdevelopment is another frequent source of unnecessarily sacrificing image quality because we fail to develop all of the image-forming silver which was exposed by the lens. Parts of our image therefore are missing from the developed negative, and, in addition, the contrast between adjacent objects is seriously undermined.

Thus, for any film and any developer, the sharpest possible image quality will obtain when:

(1) We have given the shortest exposure consistent with preserving the minimum amount of shadow density required, and:

(2) We have developed only long enough to achieve this minimum shadow density, and/or create the necessary minimum negative contrast.

The remaining question is the kind of developer we choose to employ. Developers vary considerably in the types of negatives which they produce. Very high-energy developers produce maximum density, contrast, and grain. Very low-energy developers produce minimum density, contrast, and grain. Neither should be employed with 35-mm films of any sort, except when very special circumstances exist.

Developers of the first variety build excessive density and contrast, with tremendous grain, and a loss of sharpness (particularly in the highlights) which is characteristic of overdevelopment. The extremely weak-sister type of developer, which frequently requires exposures in excess of those indicated by the manufacturer's nominal film-speed index, give very poor contrast and shadow density, giving a mushy unsharp quality.

Developers in between these two undesirable extremes differ chiefly in the amount of highlight density they produce in relation to shadow density, and in the *type* of grain they produce, which is a matter of silver solvent action. Nearly all of the fine-grain developers on the market today do have some solvent action, dissolving away the outer edges of developing grain clumps. It can be stated flatly that the greater the solvent action, the less the sharpness possible with any film or type of film, because the silver that is dissolved was part of the image put on the film by the lens. The fine-grain effect produced by these developers is in reality a fraud or "pseudo-fine-grain" effect because all we have done by dissolving the outer edges is to have increased the spacing between adjacent grains and to surround each grain with a muddy outline which tends to merge into a general mass of unsharpness in which we can not distinguish the outline of adjacent grains.

With high- and medium-speed films such as Tri-X, Ultra-Speed Pan, Plus-X, Supreme, and so forth, a very slight amount of solvent action is not objectionable, and most photographers feel, if sales figures prove anything, that such action is actually desirable. Some developers which give very slight solvent action are Promicrol, Clayton P-60, Edwal 12, and F. R. X-33B in which the solvent action is limited to the extent that individual grains, rather than an indistinct blotchiness, are recorded. Greater solvent action is obtained from such developers as Microphen, D-23, Edwal 20, and Microdol which produce grain within which it is characteristically difficult to discern individual grains, making it relatively more difficult to focus on the grain in enlarging.

While all of these formulas are perfectly satisfactory for high- and medium-speed films with their thick, juicy emulsions, they are all quite incapable of doing justice to the resolution characteristic of thin-emulsion films such as Adox KB-14 and KB-17, Ilford Pan-F, and Kodak Panatomic-X. (It should be admitted, however, that those developers which produce only a minimum of solvent action can produce results with thin-emulsion films, particularly the higher contrast emulsions such as KB-14 and Pan-F, which are far and away superior to the best results attainable from the same developers with medium-speed and high-speed emulsions.)

The achievement of maximum image quality with thin-emulsion films requires a special developer which embodies three main characteristics:

(1) *No silver solvents.* Practically all the silver in a correctly exposed thin-emulsion film negative is image-bearing; if we lose any of it through solvent action, we lose part of our image and sharpness is undermined.

(2) *Slow rate of development.* A thin-emulsion film tends to develop very quickly, and we are faced by the danger that the faster-developing highlight areas will so greatly outstrip the shadows that over-all contrast will become excessive. A very dilute developer is thus required to give ample time to the shadows without building excessive density in the highlights.

(3) *No restrainer.* A principle of development is that developer working in

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the highlights expends its energy, and therefore exhausts itself, long before developer which is working within the shadow areas. The absence of a restrainer (such as potassium bromide) insures that developer operating in the less-well-exposed shadow areas will constantly operate at its maximum energy level.

These developers, which are called "compensating developers" are not in any sense fine-grain developers, and when used on normal thick-emulsion films produce excessive graininess. With thin-emulsion films, however, they produce microscopic grain with fantastic resolution and maximum acutance.

Commercially prepared compensating developers available today are the two Neofin (formerly Neodyn) formulas, Neofin Red (for high contrast) and Neofin Blue (for low contrast), and F.R.'s X-22 formula which can be adjusted for contrast by varying the dilution. These three developers are all, incidentally, supplied in concentrated one-shot liquid form for dilution and use with one to three films before being discarded.

To realize the best possible results from any film it is necessary to integrate exposure and development technique. This involves first rerating the film to a speed index higher than the manufacturer's nominal claim. These nominal ratings are based upon the inclusion of several safety factors, or cushions, which are of little interest to the careful worker who employs an accurate photoelectric exposure meter. In addition, many photographers have come to realize that by employing higher-than-normal effective film-speed indexes they can more easily insure optimum exposure by insuring the least amount of exposure consistent with shadow-density requirements.

The following recommendations are intended as a general guide from which the critical photographer can work out his own technique.

High-speed films (nominally rated from ASA 125 to 400).

Application: Available-light photography.

Effective film speed: Rerate from one to two stops faster than manufacturer.

Development: Moderately active fine-grain developer. Full development.

Medium-speed films (nominally rated from ASA 50 to 100).

Application: General outdoor photography.

Effective film speed: Rerated up to approximately one stop faster than manufacturer.

Development: Moderately active fine-grain developer. *Normal* development.

Application: Available-light photography.

Effective film speed: Rerate from one to 2½ stops faster than manufacturer.

Development: Moderately active fine-grain developer. Full development.

Thin-emulsion films (nominally rated from ASA 16 to 40).

Effective film speed: Rerate from ½ to one stop faster than manufacturer.

Development: Compensating-developer. Full development.—

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suggestions on how to handle your

HARRY FOSTER,
director-producer,
***Wonders of Manhattan*, says:**

One fault common to all amateur movie makers is their lack of patience. I cannot emphasize too strongly that patience and a great deal of cool objective thinking about your film are vital. Don't be in a big hurry to use that camera. Plan carefully first. I know how that camera can burn in your hand, but you must learn to resist it. Master it at the very beginning. It is your tool and you must know when to use it.

Get something on film only after it's perfectly clear in your head. If you are not patient, you have no business in the field. A movie maker must set high standards for himself, make big demands and then strive to reach them in his work. He must be a relentless perfectionist. He must do scenes over and over again until they are right. Here, it is imperative that an amateur be completely uncompromising and honest with himself. He has the independence of a one-man studio, but he also bears the chain of responsibility during the successive phases of planning, preparation, and production.

Don't let all this hard talk discourage you if you have your heart set on this profession. Really, for the determined film maker, the world is his oyster. He may not have the vast studio facilities or the talent of Hollywood to draw from, but he does have complete freedom to experiment and improvise. He can take his sweet time and get that scene right. He should accept no excuses for sloppy work from himself. Making movies is a tough job. It's aggravating, wearisome, expensive, nerve-shattering, discouraging, and frustrating. But there's nothing in the world that's more wonderful!

I never was an amateur movie maker myself. I learned about films as a technician first. I started doing synchroniza-

(*Continued on page* 96)

DIRECTOR?

say you are, and offer

motion pictures

GEORGE SIDNEY, director of *The Eddy Duchin Story*, says:

The seed of every great film is a vision of some single man. He may be the writer, he may be the producer, the director—or he may just be someone's imaginative uncle. Somebody starts the ball rolling, and before it comes to a stop, it's been handled by many hands, most of them skilled. Technicians and scenic artists and wardrobe people and musicians and actors and make-up men and producers and film editors and special effects men and lab assistants and writers and cameramen, a whole army of movie workers help to convert the raw idea into a completed film. A good movie is a dream in the harness of working talent and disciplined production crews. Now, the amateur movie maker is that entire flock of specialists all in one bundle. His burden is great, but so is his freedom.

It may sound hackneyed to say that a good script is essential in the making of a film. But, if your ideas are not organized on paper beforehand, how can you expect anything but chaos on film? Every step must be carefully planned, every piece of business actually worked out and shown to be plausible before any film turns. If there is something in a script that cannot be readily visualized in filmic terms, then have it changed or deleted

(*Continued on page 96*)

SPENCER BENNET, director of *Blazing The Overland Trail*, says:

All of the improved film techniques and impressive technical achievements in the movie industry have widened the scope of film activity and raised its photographic standards. But the fundamentals of movie making remain pretty much the same. The main equipment is still the brain and the heart of the man using the camera. For these there are no substitutes. All the expensive cinematographic devices and processes in the world don't add up to a hill of beans if the man in charge doesn't know what he wants and how to get it. It's just a waste of time and money and energy.

This is especially true in the making of a western, which can often become a big-scale operation. If your direction is to have any meaning you must be in full command at all times—on the set, on location, or in the conference room. Remember that directing is as much an administrative job as it is a creative one. Don't ever try to dodge the routine supervisory chores because they're not as pleasant or inspiring as the artistic phases. Nobody ever said film directing was a snap.

Now, what connection do westerns have with you, the amateur movie maker? Well, that picnic you shot last month, that was an outdoor adventure, wasn't it? And that vacation footage you made at Grand

(*Continued on page 96*)

HARRY FOSTER

tion—dubbing—then moved into film editing. It was as a film editor that I learned how vital a good pair of scissors can be to the creation of a good movie. I had to analyze the mistakes made by various directors. Slowly I learned about the secret ingredients, the subtle needs of proper pace in a film. Making a cohesive motion picture out of all that footage that comes into the cutting room is one of the crucial stages of the production. It was not long before I discovered that it's often what you leave *out* of a movie that makes it good.

The more I worked on films, the more I thought about them and the more I talked about them. After a while, the producers began to listen to me. They were often impressed by my suggestions and appraisals. One day one of the studio bigwigs offered me the chance to direct a documentary about Mussolini. I was only 24 at the time, but I had all the confidence in the world. Having been bitten by the bug, I wanted to find out if I could direct.

The brass liked my first directional effort, so I was on my way. In the years that followed they assigned me to many types of films, but the documentary has remained my "number-one" love. In my opinion the motion-picture medium reaches its highest moments on the documentary level.

My definition of a documentary is much looser than most people in the picture business would give. There must be no tinsel—no frills in a true documentary. It must be a faithful reproduction on film of an experience or an idea or a real person. Many nondocumentaries, pictures like *On The Waterfront*, are, in a sense, really documentaries, as far as the approach to the truth is concerned. Someone once wrote that in some cases fiction

(*Continued on page 97*)

GEORGE SIDNEY

before you start shooting your picture.

Not only must a script be filmable, but its characters must be thoroughly realized by the writer before you can faithfully bring them to life before the camera. The dialogue must be appropriate, realistic, yet not stenographic. Real-life talk is often dull, repetitious, unimaginative. Have each character deliver lines as he would in real life, but have each line mean something; don't clutter up your movie with dead words for the sake of pseudo-naturalism. They will only smother your story.

You must have a rooting interest which can be either love or hate. But a film to be worth-while must provoke some sort of an emotional reaction within the viewer. The story must be arresting so that you will emotionally invest interest in it. Even in Hollywood if you had a great dramatic story and only musical personalities to perform it, or vice versa, the result by and large would be most unacceptable.

Now, Hollywood directors are just as anxious as amateur film makers to keep the number of takes and retakes down. They have to watch budget and time restrictions, so adequate rehearsal for a scene can be a great saver of time, money, and nerves. Just how much rehearsal is required depends, of course, on the type of scene, the players' experience, and the understanding by directors and actors of the meaning of the scene in relation to the rest of the movie. But take time to get a scene right before you put it on film. A director must be an artistic and creative opportunist, ready to take advantage of everything that comes his way—and make things come his way.

One thing I should warn you about is the tendency of many amateurs to overrehearse. There is a certain point when performers begin to lose vitality, when a

(*Continued on page 97*)

SPENCER BENNET

Canyon last year, that's second cousin to *Shane*—whether you realize it or not.

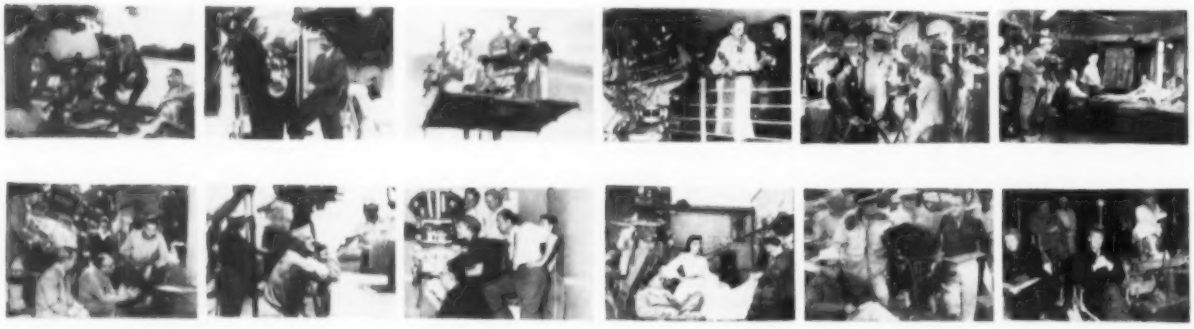
The amateur can learn a great deal from the technique of shooting a western. That extremely low-angle shot of Glenn Ford and his horse coming over a rise, riding head-on smack into the camera, provides an exciting entrance that may be adapted to your own needs. You might be doing a film about a boy going fishing. You want a dramatic method of catching the lad's "top of the world" feeling as he sets out for that lake. You establish the mood of the picture and introduce the hero with an opening scene of the boy and fishing pole coming over the hill, coming toward the camera. The camera, crouching in the gully, catches the smiling youngster as he reaches the top of the rise, with the open sky as a backdrop.

Of course, the most valuable lesson gained by the amateur from the western is the importance of movement. After all, it is a *motion* picture. The fist fights, the gun duels, the chases, the stampedes, and runaway buckboards and covered wagons—all serve to give the western a healthy supply of action. In spite of the current trend toward psychological treatment of characters in some westerns—*Jubal* is an outstanding example of this cycle—the very heart of the six-gun epic is still fast-moving action. To be static or hesitant in a horse opera (or any film) is fatal.

In the infant days of the movie industry cameras remained stationary. The film amounted to little more than a photographed stage drama. The medium took a giant step toward maturity and artistic independence when pioneers like D. W. Griffith began to move their cameras freely and experiment with cinematic techniques. Make certain there is something

(*Continued on page 98*)

DIRECTORS AT WORK



Harry Foster

(*Continued from page* 96)

carries more truth than some works that are supposed to be all true. Sometimes a great truth has to be crystallized, presented in a clean, uncluttered form. A great poem, a great novel, a great movie is just like that. We can feel its truth. It strikes the right chords in us and we know it to be real. That's a documentary—just telling the truth on film.

Some people feel that a documentary must have some vital message. Well, that's true to a certain extent. The truth (large or small) is always a vital message, no matter what it involves. Whether you are describing everyday life in the Louisiana bayous or showing a Pittsburgh steel mill in operation or instructing GIs in the proper care of their weapons—a documentary says something to someone.

The range of the documentary is the whole wide world, and that should be challenge enough to any movie maker. Speaking for myself, if I were a beginner, just starting out, I would make my first documentary about something close to home. I'd make certain I was dealing with a subject and a setting which I knew thoroughly. The result would depend on the kind of person I am, my interests, my loves and hates, and the amount of money, equipment, and talent at my disposal.

I have found the documentary to be a more flexible form than the straight dramatic film. It has to be, of course, because life in general is mercurial and unpredictable. (It doesn't follow any shooting script.) Naturally, you need some basic story line as a guide, but you must never let yourself be restricted by tight scripting. Things come up as you're shooting that were never dreamed of by the writer. You must be able to capture them and use them if they are worth-while. A maker of documentaries must be like a swimmer in a strong sea—he must adapt himself to the currents and move with them at times or he is lost. The currents and eddies of life are often surprisingly violent and beautiful. They're worth recording when you are lucky enough to get near them with a camera.

Casting is often a thorny problem for the documentary maker. Some directors prefer to work with professional actors so that they can be sure of required scenes. In the long run it is easier and cheaper to have capable "pros" play the roles in documentaries. You do have more control and a wider emotional range. But, I, personally, would rather work with nonprofessionals. Actors are always *acting*. They're just too slick and polished for the flesh-and-blood realism needed in a genuine documentary. Even the natural mistakes made by a real farmer or a real coal miner provide an inimitable flavor. Robert Flaherty, the great documentary producer who gave us *Nanook of the North*, *Man of Aran*, and *Louisiana Story*, proved that ordinary people achieve the only accurate characterizations on the screen. In most cases, Flaherty used unspoiled, "un-worldly," primitive people in wild settings—the swamps, the Arctic, the jungle, the barren islands. To tell his elementary story, Flaherty used elementary people with magnificent results.

The belief that a documentary is cheap to produce has attracted many to the field. Now, according to conventional movie budgets and Hollywood standards, most documentaries are very cheap. In a strict money sense, many documentaries can be made for practically nothing. On the other hand, some of the personal physical risks and sacrifices made by certain movie makers far outweigh any monetary costs. Often cameramen have risked their lives to provide a few minutes' footage of thrills or information for movie-goers. Next time you see a good nature film or an outstanding documentary of any kind, think of the way it was made, of the work that went into it. A little concentration on the subject will double your respect for the film and its creators.

Some beginners worry about getting into a noncommercial "arty" rut if they get tangled up with documentaries. They wonder if the making of documentaries is good training for Hollywood, their goal. Well, let me say here that any movie experience—TV commercials or musical shorts or travelogues or industrial training films—it's all movie making and all movie making is instructive and valuable. I feel that documentaries are especially stimulating and useful to the budding director because telling the cold truth with the camera is one of the toughest, most challenging chores in the world, but also one of the most rewarding.—▶

George Sidney

(*Continued from page* 96)

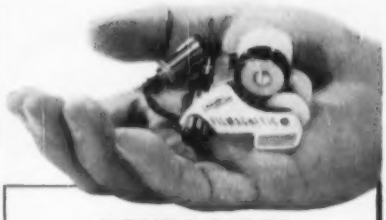
subtle deadening process begins and the scene is drained of all blood.

I can't give you any concrete suggestions about avoiding this. It's something you must learn from actual experience. Just remember that there is such a thing as overrehearsal and be aware of the fact that it can be lethal for a moviemaker.

There is one question that is always popped at me every time the subject of directing movies comes up. People are always dying to know just how I "handle actors."

Well, first of all, let me state that my whole approach to actors and actresses is based on my belief that they are individuals. I work with them according to their temperaments, acting techniques, personality traits, range of talent, and the mood they're in. My own temperament, technique, traits, talent, and current mood also color my relationship with them. I always try to be flexible with players—for a director who cannot work with a wide assortment of actor "types" is a limited director, a seriously handicapped director.

Let there be no question as to who's boss on the set. You don't have to shout or wave a riding crop, but you must be firm and confident. The director must be just that—a director. Talent and technicians will follow his guidance if he provides the artistic leadership needed to create a unified, effective motion picture. More than anyone else, a good director leaves his stamp all over a film. Next



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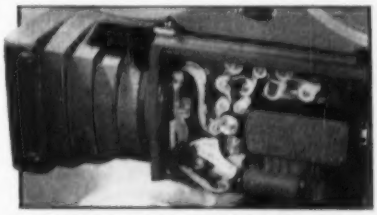

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time you see an Elia Kazan, Alfred Hitchcock, John Ford, or William Wyler movie note how each scene reveals the master's touch.

An amateur must exercise this same directorial discipline with himself as he handles the long chain of chores as his own producer, director, cameraman, set designer, and editor. He will run into some tough problems when it comes to his cast—whether it's wife and kids or the university drama society. It's always more difficult to direct nonprofessionals in a dramatic movie because acting is more than reading lines clearly and performing bits of business—it's an interpretive art that is simultaneously creative.

Of course, you won't get Uncle Dave to sound and look like Sir Laurence Olivier, and if you only have Aunt Sarah, make a picture that features her rather than trying to make Aunt Sarah a Kim Novak. Make your limitations your strength; lead through your strength. With a little work and much discussion and probing of script and characters and their meaning, the player can be better—and that's the secret of movie making. Whatever phase it is, always find a way to do it better and carry it through. Just make sure that your basic idea—that vision—is suitable for the medium, then go ahead.

Make your picture with the capabilities at hand, and remember that size alone does not make a film. If I were an amateur just starting out in the field, there is one thing I would make sure of. My first project would be short and simple. Walk before you run and all that, but in movies it takes a heck of a long time just to get up on your feet and stand. Once you are up there, the view is just grand.—▶

Spencer Bennet

(*Continued from page* 96)

really happening before the film rolls. It's as basic and simple as that.

The script of a good western must have the same qualities that all other scenarios are expected to have. It should have an engaging but simple plot, good tempo, natural dialogue (but not too much of it), and the people should be real human beings. Whenever possible, I work very closely with the writer. Amateurs can readily understand what a great advantage this arrangement is for the director. It's a time-saver, too. I make sure during this preliminary study period that the story has plenty of the kind of outdoor action that is essential in a western.

So many westerns have been turned out by Hollywood that today it is rare indeed that we cannot detect a reworked "formula" in a cowboy movie. There are few original westerns, but there are many which are handled in a fresh, imaginative manner. It is here that the director gets the chance to display his talent. *High Noon*, for example, was primarily a director's triumph. It had many familiar western situations and characters were given psychological depth and classic dimensions by the skillful hands of Fred Zinnemann.

The location is an important factor in any western, so the director should be responsible for its selection. Amateurs should not be satisfied until they find a locale with the right flavor for the film.

In the actual shooting, the director must keep full control of the company. Don't ever let your time be wasted. Particularly annoying to me is the type of actor who persistently offers advice and criticism about directing this scene and that scene. My own defense against this practice is to pay one dollar for any suggestion an actor makes *if* I approve it. If I reject the idea, the player pays me *five* dollars. This is quite effective. Amateurs may not run into this sort of thing until they turn professional—but it's a good method to keep in the back of your head for future use.

Shooting "out of sequence" is more difficult, but it is more economical. If you have three scenes in a saloon scattered throughout a movie, shoot all of them in succession and then move on to the next set or site. This bothers some actors, of course, but only the inexperienced ones. Seasoned performers are never bothered by nonchronological shooting. You tell them what you want and they deliver without fuss.

It takes more than a starkly-beautiful desert or a dancing wheatfield or majestic mountains to put a western across. Never forget that your play's the thing. It's more important to spin a decent yarn than to capture all the scenic beauty in the world. Unless you're making a travelogue, concentrate on relating location to the elements and characters of your story.

Making a western on a limited budget (little money and little time really puts you under tremendous pressure), you get to be pretty greedy about sunlight. You take advantage of every hour of daylight. In the summer you can often shoot for ten hours in a day. Comes winter and you're through after seven or eight hours. Usually, my toughest lighting problem is that awful "in-and-out" sun that creates a constantly changing light. That's rough because you lose all-valuable time. It never fails to happen that on the last shooting day, you have at least two days' work remaining to be done. But it's all part of the maddening game.

I feel, the beginner should launch his movie career with a simple film—a short scenic which does not involve people or animals. It's just you and the camera in collaboration with Mother Nature. While turning out this first effort, be sure to keep seeing movies, all kinds.

See them twice, three times if you feel the need. Study them. Get to know what a camera can do, how it can be used most effectively, how it is often abused or misused by careless people. See good, great, and poor movies. Sometimes you can learn more about film techniques from poor films with their ribs showing than from the fine ones.

You never can tell what will be of help to you as a movie director, so get the broadest, deepest education (formal and otherwise) that you can. But the first requirement is a sincere love for the movies. You must really feel that filmmaking is just about the most important job in the world. You see, it is.—▶

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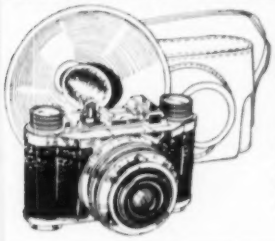

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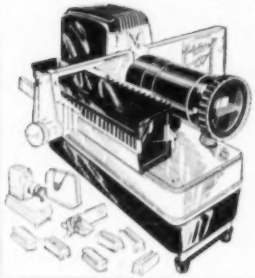

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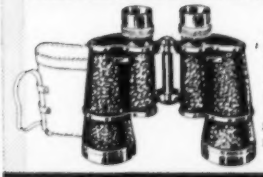

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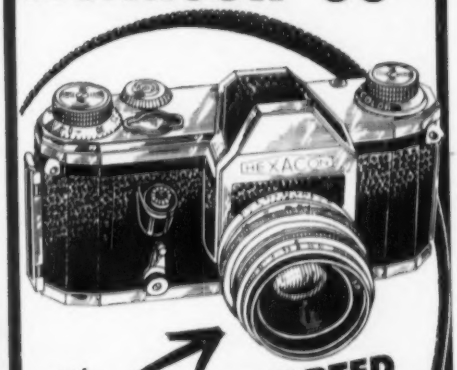

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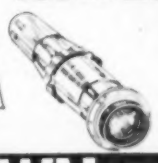

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35-mm TODAY by Bob Schwalberg

Exposure technique for very long- and short-focus lenses

Among the compensations involved in writing a column is the opportunity which it occasionally affords for walking way out on an editorial limb. For some time now I've had a theory about shooting with lenses of very short and very long focal length which I've hesitated to discuss in print. What it amounts to is simply this:

Exposure is affected by focal length, and to obtain a given result in a given situation, the "correct" exposure for a lens of standard focal length is different from the "correct" exposure for either a wide-angle or a long-focus lens.

This is certain to raise some eyebrows and start some arguments. In recent months, however, I've been experimenting with some lenses of extremely long and extremely short focal length, and this experience tends to confirm my original suspicions.

All wide-angle lenses, and particularly those with focal lengths shorter than 35 mm, tend to be noticeably slower than standard focal lengths when the same apertures are used. In addition, all wide-angle lenses produce somewhat less density in the corners of the negative than they give in the center. The more we underexpose, and the greater the *f*-stop used, the more noticeable are these effects. When we give full exposure, however, both tendencies disappear, for all practical purposes. In testing a number of wide-angle lenses for vignetting it became immediately apparent that the degree of darkening in the corners was inversely proportional to the exposure given. When exposures were increased by no more than ½ stop (in relation to the best exposure obtained with a standard 50-mm lens) this vignetting could not be detected in enlargements. Part of this "cure" should be credited to the vignetting of the enlarger lens which gives relatively more exposure to the center of the print.

With long-focus lenses there is a definite reduction in contrast which appears to be directly proportional to focal length and shooting distance. Part of this effect, and probably the largest part, stems from the fact that when we use lenses of shorter focal length we include more subject area and almost always a wider range of tonal values. In addition, when we use a long lens to photograph a distant object, the combination of distance and various atmospheric effects seems to compress the brightness ratio of the original scene. One long lens was first tested indoors by making head shots from distances ranging from 15 to 30 feet, and it revealed no appreciable loss of contrast. When this same lens was used outdoors on an average bright day, pictures made at infinity showed a decided loss of contrast in comparison to other negatives made with a 135-mm lens. In every case, approximately ½ stop underexposure and slight (20-25 percent) overdevelopment resulted in negatives of normal contrast which printed well on a No. 2 paper grade.

It is therefore our contention that wide-angle lenses (particularly those of 28-mm or shorter focal length) give negatives of normal density, and are free from apparent vignetting when exposure is increased by about ½ stop and normal development is given, while long-focus lenses (particularly those of 200-mm or longer focal length) ought to be somewhat underexposed, and very slightly overdeveloped.

Another interesting thing noted in our tests was the apparent tendency of thin-emulsion films to emphasize the loss of light and vignetting of wide-angle lenses, and to minimize the contrast compression of long lenses. With the latter we frequently found that a very small amount of additional development would restore normal contrast without any decrease in exposure. Faster films, on the other hand, seemed to minimize the defects in wide-angle lenses and to increase the loss of contrast in long lenses.

Our tests showed no appreciable difference in density or contrast with lenses from 50 to 135 mm in focal length, and a number of lenses from different manufacturers were included in the tests. The popular 35-mm wide-angle does show a very slight amount of vignetting and loss of lens speed when apertures greater than *f*/4 are used, but only when the negatives are underexposed. With full normal exposure we could detect no difference between negatives exposed with 35-mm and 50-mm lenses.

A New Way to Make 35-mm Contact Sheets without Tears

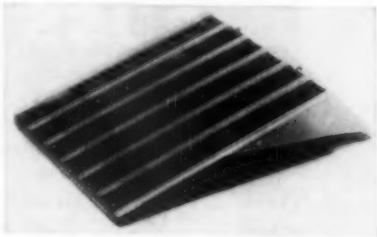
One of the nastiest problems in 35-mm work is the contact printing of 36 exposures (usually cut into six strips of six negatives apiece) onto a single sheet of 8x10 paper. With a conventional contact printer, contact frame or simple piece of glass used under the enlarger, getting these six strips to lie parallel without overlapping is a chore that has driven many a 35-mm man to the brink of a larger negative format.

This problem was recently solved by Jack Alberti, a painter, commercial artist, and amateur photographer with a mechanical bent. Struggling with some 35-mm negatives which were badly curled, Alberti decided that there must be a better way of contacting 35-mm. The result of this determination was the M.-P. "Multi-Printer" which Jack now manufactures in quantities barely sufficient to meet the demand.

The "Multi-Printer" consists of a piece of clear Plexiglass hinged to a wooden base covered with felt. On the inside of the Plexiglass there are six pairs of grooves cut in at a 45° angle to each other and spaced one inch apart. To load the "Multi-Printer" you simply slide your negative strips into these grooves emulsion side down by bending them backward and pushing the perforated edges down. The strips slip in easily and are held by the edges only. Because of the reverse curl, only the edges are in contact with the Plexiglass, the shiny back of the film never touching anything.

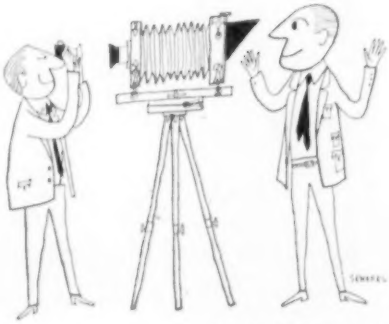
Once loaded, the "Multi-Printer" can be used to make any number of perfectly even, parallel contact sheets. Loading takes only a minute or two, after which you insert your 8x10 printing paper, close the sandwich with the two latches provided, and expose by means of your enlarger or other light source.

The only disadvantages of the "Multi-Printer" is that since the edges of the film are inside the grooves, you lose the frame numbers imprinted on the film. This disadvantage can be remedied by printing your own numbers on the spaces between the grooves. Mr. Alberti suggests printing on the reverse side of thin Scotch tape so that the numbers will appear backward when viewed through the top of the printer.



This ingenious "Multi-Printer" device provides a new means of making 35-mm contact sheets. Grooves in the transparent Plexiglass cover plate hold negative strips in place.

The M-P "Multi-Printer" is a useful addition to the 35-mm darkroom and, aside from making an onerous chore easier and more pleasant, encourages the making of valuable contact-sheets. (You can't really tell the hits from the misses without a contact sheet.) The Model A "Multi-Printer" for contacting an entire 36-exposure roll onto 8x10 paper costs $9.95. Smaller models are also available at lower prices. If your dealer can't supply you, write to the M.P. Manufacturing Company, Box 79, Brooklyn 23, New York.—▶



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85.00	75.00	115.00	115.00	145.00	195.00	220.00	225.00	230.00	235.00	255.00	315.00
75.00	65.00	105.00	105.00	135.00	185.00	210.00	215.00	220.00	225.00	245.00	305.00
65.00	55.00	95.00	95.00	125.00	175.00	200.00	205.00	210.00	230.00	235.00	295.00
60.00	50.00	90.00	90.00	120.00	170.00	195.00	200.00	205.00	210.00	230.00	290.00
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The Coupled Rangefinder Is for Me

(*Continued from page* 38)

we must swallow our pride and convert it into a poor relation of the prism reflex by means of a reflex mirror housing. Actually, I admitted all of this in my July column, and repeating it here is extremely distasteful.

When it comes to the short-short (or close-close) view, the single-lens reflex again walks off with the honors. Almost all coupled rangefinders work down to about 3½ feet, after which extension tubes, bellows focusing devices and reflex housings enter the picture. If you want to photograph a gnat's navel you'll have to add $100, or more, to your rangefinder camera equipment. With a Makro Kilar on the prism reflex, on the other hand, one can turn from photographing a moonscape at infinity and push the lens to within two inches of his beloved's eyes and record their limpid, and possibly dilated, beauty.

Now, in between the long-long and the short-short views there is more than one might suspect. For instance, there's the long view, the short view, the medium-long view, the medium-short view, and the medium-medium view. People who don't get paid by the word the way I do have a simpler way of expressing this. They call it *photography*. It is within these confines that the coupled-rangefinder miniature possesses certain marked advantages. Let's take these up in the order in which they're most likely to be encountered.

Speed in focusing. Rangefinders, to coin a phrase, are better than ever. They're bigger, brighter, more contrasty, and faster in operation than ever before. With a rangefinder camera you move straight into focus instead of having to twist the lens back and forth several times as you do in focusing an enlarger. As soon as you're in focus with the rangefinder, particularly the excellent coincidence type, you know it. With the groundglass of the prism reflex there's a period of uncertainty.

Ease of focusing. Experience with the Big Four rangefinder miniatures, the Contax IIA, Leica M-3, Nikon S-2, and Canon V, indicates that all of these cameras can be focused under light levels so dim as to make photography unfeasible. Dim and, especially, flat lighting is the bane of the reflexman's focusing existence. Lenses plus mirrors plus roof prisms eat up a lot more light than coupled-rangefinder systems. In addition to this, the rangefinder handles short focal lengths just as easily as standard or medium-long lenses. The extreme depth of field of lenses like the 28- and 35-mm wide-angles (the shortest wide-angles now available for prism cameras) makes these lenses very difficult to focus with the single-lens-reflex miniature.

Accuracy of focusing. Rangefinder focusing is inherently more accurate than groundglass focusing because the rangefinder mechanism can discriminate much more critically than the human eye. An average, healthy human eye can resolve specks as small as about .00397 inches in

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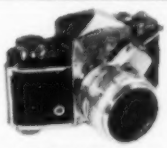

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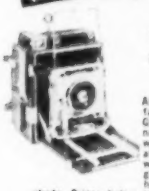

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	135mm Optar f/4.7	368	319
	135mm Tessar f/4.5	348	299
4 x 5	150mm Schneider Xenar f/4.5	348	299
	150mm Tessar f/4.5	348	299
	150mm Tessar f/3.5	399	379
	150mm Schneider Xenotar f/2.8	499	459
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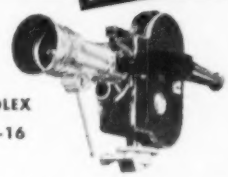

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What happens when you focus on a groundglass, with or without a prism, is something like this. **1** We start rotating the lens in one direction, and the image becomes sharper and sharper. **2** Unbeknownst to us we hit the .004 resolution limit, and continue to focus past this point until, **3**, everything looks unsharp again. **4** Now we backtrack and try to regain the sharpness that we saw on the groundglass before we went too far. Depending upon how finicky you are, this may happen once, twice, or any number of times until we're satisfied that we're really "in." What this amounts to is trying to pin the focus between the two discernible .004 dots.

The prism finders have their eyepieces adjusted to show the whole field of the negative aperture, which is a necessity for purposes of edge-to-edge composition, an advantage of single-lens-reflex equipment. Unfortunately, however, this also means that they offer relatively low magnification of the groundglass image. One wonders whether a supplementary higher-power focusing magnifier could not be built into these systems for critical focusing in such a way that it could be removed from the system instantly for purposes of composition.

Optical researchers tell us that the point of maximum contrast and the point of maximum resolution do *not* coincide. In real life we sometimes focus on contrast, sometimes on resolution, depending upon various lighting and subject conditions, as well as the characteristics of our lenses. Contrast and resolution are the two vital building blocks which make up what we call "sharpness." Lenses intended for coupled-rangefinder operation are factory adjusted in their critically accurate lens mounts to give the best average compromise for these conditions.

In addition, the coupled rangefinder allows the lens designer to adjust his optics for optimum results. For example, let's assume that the designer knows that there will be a focusing error of "X" at the edges of the negative. This error is more than he can permit, but ½ "X" falls safely within the limits of the depth of focus for the maximum lens aperture involved. He may, therefore, slightly back-focus the lens so that when the rangefinder is focused on an object in the center of the picture there will be an error of ½ X in the middle and ½ X at the edges. The net result is that the edge sharpness of the lens is much improved, with no appreciable loss of sharpness in the center of the negative.

Many prism cameras have some sort of through-the-lens rangefinding device incorporated into the prism-groundglass system. These special rangefinders, normally of the split-field type, are of great value in obtaining sharper pictures under poor focusing conditions with the single-lens reflex. This is particularly true when lenses of relatively short focal length are employed. They are not, however, nearly as accurate, or as easy to use as the coupled rangefinders used in non-reflex cameras. And, because they are working with light rays coming in through the lens, instead of being independent from the lens, they can not adjust for special lens characteristics as the independent coupled rangefinder can.

Next we come to *Time Lag No. 1, From Focusing to Stopping Down.* This, of course, does not apply to the coupled-rangefinder miniature which is stopped down before we begin focusing. Over the years, we must admit, great strides have been made to minimize this inherent limitation in single-lens-reflex camera design. First came "preset" diaphragms, then the semi-automatic, and now the automatic diaphragm. With the Contaflex camera, for example, pressing the shutter release automatically causes the diaphragm to snap down to your preselected *f*-stop before the mirror rises. The most widely used system, however, is the semi-automatic diaphragm which consists of a spring-loaded diaphragm control button positioned directly in front of the camera body-release. To make an exposure you press down upon this button which, in turn, presses the body-release to make the exposure after the diaphragm has been closed down. In my experience this must be a slow, gentle shove if we want to avoid camera movement, and accustomed as we are to the hair-trigger action of coupled-rangefinder cameras, it sometimes seems agonizingly long before the shutter goes off. These gadgets are, incidentally, available only for a relatively small number of lenses and focal lengths. A battery of lenses for the single-lens reflex would have to include many lenses with the preset (manual) arrangement as well as others having only a standard diaphragm.

Time Lag No. 2, From Pressing the Release Button to Exposing the Film, is a very serious single-lens-reflex problem stemming from the necessity to remove the focusing mirror from the light path just prior to opening the shutter. This delay has been variously estimated for different cameras, but 1/50 second is probably a fair over-all estimate. The importance of this delay depends upon the type of photographs you make. Many confirmed rangefinder addicts insist that because of this mirror delay they miss fleeting expressions which are easy prey to the quicker-firing coupled-rangefinder miniature. If you're shooting rapid action with your shutter set at 1/500 second, this delay is equal to ten times the shutter speed at which you're shooting. Assuming that 1/500 was needed to stop the action involved, how much motion will have occurred in 1/50 second? (This, incidentally, seems to be the single real advantage of the reflex-mirror housings supplied for the coupled-rangefinder cameras. After you're in focus you can leave the mirror up and use some sort of optical or frame finder for framing the picture, thus obviating mirror delay.) Most interesting to me is the fact that I have never found even one single-lens-reflex

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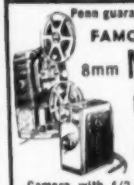

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aficionado who was ready to admit that this delay had even the slightest significance.

In my opinion however, it is this mirror lag which constitutes the single most serious disadvantage of the single-lens reflex. As soon as you press the shutter-release button the image blacks out, and you're in the dark. After a 1/50-second delay, the shutter opens to expose your photograph. In other words: You never see the picture you make with a single-lens reflex until you develop the film. It all happened while you weren't looking.

To wind this up, if the prism reflex is the master of long focal lengths, the rangefinder camera is the wizard of wide-angles. Have you ever tried to focus a 28- or 35-mm wide-angle on a prism reflex? If the reflex can cope with subject distances beyond the rangefinder's capabilities, then the coupled rangefinder can operate under adverse lighting conditions which make the prism camera almost inoperative. If the prism reflex is free from optical parallax, then the rangefinder camera is free from time lags and delays in focusing, stopping down, and raising the focusing mirror.

The prism reflex is a useful tool which brings many advantages to a number of specific, and I think *special*, photographic applications. But for all-around utility in photographing people, places and events, give me the coupled rangefinder. And if Barrett Gallagher can display the broadmindedness to equip himself with an M-3 Leica, who knows what may turn up in my gadget bag one of these days?

Two points of rebuttal

1 I must accept my worthy opponent's data concerning human reaction time being 1/5 second. Let me point out, however, that this reaction time will be the same whether you're operating a single-lens reflex or coupled-rangefinder miniature, and that the 1/50-second delay about which I spoke commences *after* Gallagher's 1/5-second finger delay. With a coupled-rangefinder miniature, however, you automatically take up the delay in the shutter-release button so that when you want to shoot it only takes a hint of pressure from your finger. This is not possible with any of the single-lens reflexes with which I have ever worked. The slightest pressure on the release buttons of these cameras either sends the mirror flying up, or starts to raise the mirror on models in which the mirror is pushed up instead of being under spring tension.

2 Friend Gallagher notes with interest that I've just bought a single-lens reflex. What else could I do with Gallagher touting the Leica M-3?—

I Like a Single-Lens Reflex Best

(*Continued from page* 39)

single-lens reflex. Last month I found myself in a situation where the only possible vantage point from which to take the picture was from the next room through a 2¼-in. hole in the wall. With the rangefinder camera neither the viewfinder nor the rangefinder could see. With the single-lens reflex, no problem. Granted this was an unusual case, the same principle applies working through fences, through small vent holes in airplane windows, tight places in general.

The rangefinder camera is easier to focus (especially in dim light and especially with wide-angle lenses), provided it has a combined rangefinder-viewfinder. However, in dim light your reflex lens is apt to be open wide enough to let you see to focus. If it's bright enough to require stopping the lens down—especially with color—it is also bright enough so you still have a satisfactory image and the depth of field is so increased focus is not critical.

Wide-angle lenses are difficult to focus by reflex viewing because they have such a tremendous depth of field it is hard to tell when they are at the sharp point. Conversely this depth of field provides lots of latitude, and therefore setting an estimated distance on the focusing footage scale works well.

As a matter of practice wide-angle lenses usually take in such a big area—most of a room—it is best to focus by using the depth-of-field scale on the lens, choosing an *f*-stop so the nearest and most distant points of interest fall within its limits, rather than by picking out one object to focus on. If the principle point of interest is, say, at fifteen feet, it usually works out best to focus somewhere around ten feet, so the infinity mark is just past the footage mark representing the farthest point of interest. Otherwise, you waste a large part of the capability of the lens by having half of the depth of field range lie beyond infinity.

The reflex prism split-image rangefinder is amazingly accurate and quite satisfactory if you have a straight line to bisect. It does not work on eyes. Half of it blacks out if you stop it down too far, but the resulting depth of field makes groundglass focusing quite adequate.

The automatic lens which permits single-lens-reflex focusing wide open and automatically stops the lens down to a preset opening the instant you trip the shutter is a big help. It's now available in 50-, 58-, and 35-mm lenses, with 90-mm and other lenses promised.

Being able actually to *see* the depth of field your lens offers at different *f*-stops is a unique advantage of the single-lens reflex and often is of major importance.

The M-3 Leica has an extremely consistent shutter, especially at speeds of 1/500 and 1/1000, where many other focal-plane shutters will reveal in an area of clear blue sky some unevenness of exposure due to the slightly different speeds of travel of the two focal-plane curtains. The rangefinder camera in general (and the M-3 Leica in particular) is quieter than the mirror-flopping reflex. I suspect my friend Mr. Schwalberg will accuse this mirror, also, of being subject to misalignment, but I have never experienced any difficulty in this respect.

Using the Leica M-3 as an outstanding example of the rangefinder camera, we will concede that because three focal lengths couple to the viewfinder system

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Contax IIA, Sonnar F:2	298.00	130.95
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Kodak Pony F:4.5 synch.	29.75	12.25
Kodak Signet, Ektar F:3.5 Rfdr	75.00	39.50
Kodak Retina IIA, F:2 Rfdr.	127.50	64.95
Kodak Retina IIIC, F:2 Ex. Met.	190.00	109.50
Leica IIIA, F:2 Rfdr.	.....	73.50
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Robot Royal 36, latest F:2	325.00	196.00
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Voigtlander Vitessa L, F:2.8	139.50	81.25
Voigtlander Vito IIA F:3.5	54.50	30.00
Exakta 66, Tess F:2.8	319.50	168.75
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Revere 88, F:2.5	74.50	28.00
Revere 84, Turret, F:2.5	122.50	46.00
Vistascope 8mm	75.00	39.50
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Kodak Brownie, case	62.00	33.95
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B & H 70DL, Turret F:1.9	365.00	194.95
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Keystone K161, splicer, case	169.50	71.95
Revere 48, 750W	160.00	69.50
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B & H 285C, Sound	449.95	245.95
B & H 202C, magnetic sound.	719.50	444.00

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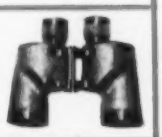

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this is indeed a beautiful and convenient machine. *(The viewfinder of the new Canon V couples with two focal lengths—35- and 50-mm.* Ed.) Aside from this camera, the limitations of coupled-rangefinder design include the fact that except for the normal 50-mm lens these cameras require supplementary viewfinders. Since the rangefinders do not work with lenses longer than 135 mm or at distances closer than 3½ feet, a costly mirror-reflex housing must be used. This is especially true for critical close-up work where extreme parallax and limited depth of field make such a housing indispensable.

In spite of parallax correction, field of view differs from taking lens, and especially in close you do not always get what you see. The single-lens reflex is the versatile camera with no parallax, no viewfinders, no mechanical rangefinder limits. It lets you see full size with any lens exactly what you get—including actual depth of field. It has no windows to collect fingerprints. This point is especially important in color work where cropping must be done precisely at the moment of picture taking rather than in the darkroom. For good measure, it insists that you remove the lens cap, which obviously you can't see through. It can do any job the rangefinder can do and many more, too. If I had only one camera, it would be a single-lens reflex.

Three points of rebuttal

1. To trip the reflex automatic shutter, Schwalberg says, requires "a slow, gentle shove if we want to avoid camera movement." Nonsense! With the camera braced against the cheekbone, first finger on trigger, thumb opposite, behind camera, the smartest snap is just pressure between thumb and finger, which does not move the camera.

2. Friend Schwalberg notes with interest that no reflex user admits that the time required for the mirror to flip has any significance, but it does not occur to him that this may mean something—they may be right. Accepting his estimate of 1/50-second delay, and Schwalberg is famous for his statistics, this is 1/10 of the normal human reaction time, which is 1/5 second. You do not catch peak action by pushing the button when you see it: you anticipate to allow for the delay built into your nervous system and start to push the trigger well ahead of the peak. It would be my guess that the mirror-flip delay is either so small that it approaches the limits of human capabilities or that, with practice, it can be compensated for in anticipation. By arbitrarily comparing it (unfavorably) with the 1/500 second conveniently "needed to stop the action" he arrives at a conclusion which is perfectly correct in theory, but quite the other way around in practice.

3. I note with interest that friend Schwalberg has just bought a single-lens reflex—I think it means something . . . I think he is right!—

Why Use a Wide-Angle Lens?

(Continued from page 42)

object with a maximum amount of sharpness in the picture. If *Life* man Villet had attempted to photograph candidate Kefauver's famous outstretched hand with a lens of normal focal length he'd have gotten the hand, but no senator behind it. The very wide-angle 28-mm lens he used, however, enabled him to focus on the senator and allow the hand to extend forward past the lens' 3-foot minimum focusing distance, the 28's great depth of field bringing it into reasonably sharp focus. The effect is a picture in which the subject seems to be addressing the viewer directly.

This example of intentional distortion used for a dramatically appropriate journalistic effect is also typical of the phenomenon which is popularly, and quite undeservedly, castigated as "wide-angle lens distortion." Actually, perspective is entirely independent of focal length and is determined only by the shooting distance. *(The exception to this is the view camera whose adjustable lens board and film back permit perspective adjustments by altering the normally parallel relationship between lens and film.)* In this case the photographer has moved in close in order to exaggerate the size relationship between the outstretched hand in the foreground and the rest of the body in the background. Longer lenses would not have included as much of the subject or provided the necessary depth of field.

Whether or not a given focal length is a wide-angle or not depends upon the relationship between the focal length and the negative diagonal. One man's tele may be another's wide-angle. Consider the 90-mm focal length. On the miniature the 90 is a medium-tele, covering a narrow angle of view and giving an image 80 percent larger than the standard 50-mm lens. On a 4x5 view camera, however, the 90-mm lens is considered an extreme-wide-angle, covering a field of view of some 85 degrees. In the first case the 90-mm focal length is more than twice as long as the 43.2-mm diagonal of a 35-mm full-frame negative; in the second it is only about 55 percent as long as the 4x5 negative diagonal.

By far the most popular wide-angle for the miniature camera is the 35-mm focal length. Covering a diagonal field angle of about 63 degrees, these lenses have long been mainstays of the candid, documentary, and journalistic photographers who have delighted in its ability to relate objects within its view and seemingly to tie them together. The ability of a wide-angle lens to include a tremendous amount of subject matter is not a solution to the problem of taking good pictures, but a challenge. Barring special circumstances, the less the picture is cluttered with assorted objects, the easier it is to take a meaningful photograph. Pointing a wide-angle lens is somewhat like blasting away with a sawed-off shotgun: You can't miss hitting your target, but you may also hit innocent bystanders.

In 99 cases out of 100, the photographer who has learned to use his wide-angle lenses will compose to the frame and enlarge the entire negative or crop very slightly. People who constantly enlarge small sections from their wide-angle negatives haven't discovered its potentialities

35mm CAMERAS

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Argus C3, case and flash	$66.50	$32.95
Canon with 50mm Zunow F:1.1	485.00	291.00
Canon IV-S2, F:1.8 Rfdr	295.00	139.00
Canon V 50mm F:1.2 Canon	450.00	335.00
Canon V 50mm F:1.1 Zunow	650.00	499.00
Contax I, Sonnar F:2		64.50
Contax III, Sonnar F:2		66.50
Contax IIA with 50mm Zunow F:1.1	629.00	451.00
Contax IIA, Sonnar F:2	298.00	184.00
Contax IIA, Sonnar F:1.5	318.00	188.00
Contax IIIA with 50mm Zunow F:1.1	659.00	465.00
Contax IIIA, Sonnar F:1.5	348.00	199.50
Exakta VX with 50mm F:1.5 Angenieux	279.50	167.70
Kodak Bantam Special F:2		61.00
Kodak Pony F:4.5 synch	29.75	10.75
Kodak Signet, Ektar F:3.5 Rfdr	75.00	38.50
Kodak Retina IIA, F:2 Rfdr	127.50	65.50
Kodak Retina IIC, F:2.8 MX	139.00	80.00
Kodak Retina IIIC, F:2 Ex. Met.	190.00	109.75
Leica IIIA, F:2 Rfdr		73.75
Leica IIIC, F:2 Rfdr		93.50
Leica IIIF with 50mm Zunow F:1.1	439.50	263.70
Leica IIIF with 50mm F:1.2 Fuji	369.50	221.70
Leica IIIF, Elmar F:3.5	217.00	122.95
Leica IIIF, F:2	336.00	140.95
Leica M3, camera only	288.00	173.50
Leica M3 with 50mm Zunow F:1.1	594.50	356.70
Leica M3 with 50mm F:1.2 Fuji	479.50	287.70
Minox III, F:3.5 ctd	119.00	60.95
Minox IIIS F:3.5 synch	139.50	72.95
Nikon S-2 with 50mm Zunow F:1.1	495.00	297.00
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Super D with 50mm F:1.5 Angenieux	269.50	161.70
Voigtlander Prominent F:2	220.00	97.50
Voigtlander Prominent F:1.5	270.00	134.95
Voigtlander Vitessa L, F:2.8	139.50	81.50
Voigtlander Vitessa, F:2	127.50	69.50
Voigtlander Vito IIA F:3.5	54.50	30.75

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Revere 555, 500W, case	89.95	56.75
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Graflex Super D 3x4, autom.	289.50	96.00
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Kodak Medalist, Ektar F:3.5		49.95
Kodak Medalist II, Ektar F:3.5		99.50
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Minolta Autocord, F:3.5	99.50	55.75
Primaflex, Tessar F:3.5 ctd		91.00
Ricohflex F:3.5 ctd	29.95	17.50
Rolleicord IV, Xenar F:3.5		61.95
Rolleicord V, Xenar F:3.5 MX	134.55	72.50
Rolleiflex Auto, Tessar F:3.5		84.95
Rolleiflex Auto, Xenar F:3.5		71.95
Rolleiflex Standard, Tess. F:3.5		46.00
Super Ikonta A, Tess 3.5	99.00	40.00
Super Ikonta B, Tess 2.8	139.00	61.95
Super Ikonta BX, Tess 2.8	161.00	79.95
Super Ikonta C, Tess 3.5	114.00	54.95
Voigtlander Bessa II, Heliar 3.5	164.50	36.50

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B & H Mag. 172-B F:1.9	164.95	86.95
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Cine Kodak Mag. F1.9	149.50	52.50
Cine Kodak Brownie F:2.7	29.95	17.50
DeJur Federatic, Mag. F:2.5	127.50	49.75
Revere 88, F:2.5	74.50	28.25
Revere Mag. F:2.5	99.50	46.00
Revere 80, F:2.5	97.00	39.50
Revere 84, Turret, F:2.5	122.50	45.00
Vistascope 8mm	75.00	39.95
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B & H 253 Monterey 500W	79.95	42.25
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Keystone K 100 latest, case	99.50	55.75
Keystone K95M, wide-field	129.50	63.50
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B & H 70DL, Turret F:1.9	365.00	206.00
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Bell & Howell 70-DR 10mm F:2.2 & 1" F:0.95 & 3" F:1.5	474.50	284.70
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Cine Kodak Mag. 16, F:1.9		52.25
Cine Kodak Model "K" F:1.9		59.00
Cine Kodak K100, F:1.9	269.00	166.50
Cine Kodak Royal, F:1.9	179.50	86.00
Keystone K50 Mag. F:2.5	129.50	59.00
Mansfield F:2.5, 100	38.75	
Pathe Super 16, F:1.9	511.00	215.00
Revere Mag. 16, F:1.9	182.50	67.00
Victor III, F:2.5, 100		32.00
Victor IV, Turret W.3 lenses	278.00	91.50
Vistascope 16mm	125.00	69.00
B & H Diplomat 750W case	299.85	154.00
Keystone K161, splicer, case	169.50	72.50
Kodascope Royal, 1000W	275.00	166.50
Revere 48, 750W	160.00	69.95
R.C.A. Jr. sound proj.	450.00	226.00
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B & H 285C, Sound	449.95	246.00
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CONTAX IIA	NEW	179.00	—	—	479.00	—	269.50	234.00	—
	Used	99.40	—	—	279.40	—	153.70	132.40	—
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50mm f1.5 Angenieux Pre-Set	416.50	299.00	192.00
50mm f2.8 Carl Zeiss Tessar Pre-Set	326.50	189.50	139.50
40mm f3.5 Macro-Kilar	229.50	189.50	155.00
58mm f2 Carl Zeiss Biotar Automatic	392.00	254.50	199.00
50mm f1.9 Schneider Xenon Automatic	398.70	259.00	195.00
50mm f2 Westagon Automatic	336.50	219.50	159.50
50mm f2.8 Westanar Automatic	296.50	179.50	139.50
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YOUR OLD LENS				Fujinon 35mm f2 179.50 List	Zunow 50mm f1.1 450.00 List	Fujinon 50mm f1.2 299.50 List	Canon 50mm f1.2 250.00 List	Nikkor 85mm f1.5 299.50 List	Canon 85mm f1.5 238.00 List	Angenieux 135mm f2.5 179.50 List
Leitz	35mm f3.5	Summaron	+	90.00	290.00	190.00	150.00	190.00	139.00	90.00
Canon	35mm f2.8	Serenar	+	90.00	290.00	190.00	150.00	190.00	139.00	90.00
Nikon	35mm f3.5	Nikkor	+	90.00	290.00	190.00	150.00	190.00	139.00	90.00
Leitz	50mm f1.5	Summarit	+	40.00	260.00	140.00	100.00	140.00	89.00	40.00
	50mm f2	Summicron	+	40.00	260.00	140.00	100.00	140.00	89.00	40.00
	50mm f2	Summitar	+	80.00	30.00	180.00	140.00	180.00	129.00	80.00
Nikon	50mm f1.4	Nikkor	+	30.00	250.00	130.00	90.00	130.00	79.00	30.00
Canon	50mm f1.8	Serenar	+	70.00	290.00	170.00	130.00	170.00	119.00	70.00
	50mm f1.5	Serenar	+	50.00	270.00	150.00	110.00	150.00	99.00	50.00
	85mm f1.9	Serenar	+	80.00	300.00	180.00	140.00	180.00	129.00	80.00
Leitz	90mm f4	Elmar	+	80.00	300.00	180.00	140.00	180.00	129.00	80.00
	135mm f4.5	Hektor	+	60.00	280.00	160.00	120.00	160.00	109.00	60.00
Nikon	135mm f3.5	Nikkor	+	60.00	280.00	160.00	120.00	160.00	109.00	60.00

SALE! FRESH FILM

No Reloads
Latest 1956 & 1957 dating.
All in original packaging.

Kodak

KODACHROME

	List	Sale
K135 20 Exp.	$1.85	$1.35
K135 36 Exp.	2.60	1.89
K828	1.00	.75
No. 369 8mm Roll Film	3.75	2.80
No. 117 8mm Magazine	4.65	3.50
No. 265 16mm Roll Film 100'	10.40	7.90
No. 382 16mm Magazine	6.95	5.35

KODACOLOR

	List	Sale
127	1.10	.86
120	1.25	.92
620	1.25	.92

EKTACHROME

	List	Sale
E135 20 Exp.	1.85	1.36
E828	1.00	.75
E120	1.25	.92
E620	1.25	.92

Please indicate if indoor or outdoor film is desired.
Complete price lists available on all types of film (roll film, film pack, cut film) for all types of cameras (domestic and foreign).
We have in stock for immediate delivery Kodak, Ansco, Polaroid, Adox, and other makes.

KODAK RETINA IIC

104.63

35mm. Front lens element interchangeable with W.A. & Tele elements (below). Combined RF and viewfinder. Sync shutter 1 to 1/500 sec. One stroke rapid film advance lever.

Retina IIIC, f2	142.00
Retina Longar	61.75
Retina Curtar	47.75
Retina Universar Finder	13.25
Telephoto Attachment for All Retina Cameras	14.80
Wide Angle Attachment for All Retina Cameras	14.95

ARGUS C-4

42.65

35mm camera with f2.8 coated lens, coupled rangefinder, built-in flash synchronization. List price $89.50. Used.

Argus C-3 used	32.95
135mm f4.5 Tele. Lens For Argus C-3	29.95

MAGAZINES AND TRAYS FOR SLIDE PROJECTORS

for TDC Project., Reg. ea. 1.50	Spec., 10 for 4.75
for Aircquipt Changer, Reg. ea. 2.25	Spec., 10 for 16.85
for Bavaro Project., Reg. ea. 1.40	Spec., 10 for 7.40
for Viewlex Project., Reg. ea. 1.50	Spec., 10 for 4.75
Port. File Cab. for 12 Trays, Reg. 14.95	Spec., 7.95
Port. File Cab. for 24 Trays, Reg. 28.00	Spec. 12.95

ConSol—1956 MODEL

129.50

Brand new. Also known as Contax D, Pentacon, Hexagon, etc. Penta-prism. Shutter to 1/1000. 58mm f2 Biotar Pre-Set.

58mm f2 Steinheil Quinar Automatic	199.95
50mm f1.9 Schneider Xenon Automatic	214.95
Pentacon with Automatic Westenar f2.8	129.50
Pentacon with Automatic Westagon f2	149.50
Pentacon with Automatic Xenon f1.9	222.50

Free on request: complete price list of Contax Super D, Pentacon, Contax D, new & used, with/without lenses, incl. acces.

LEICA M3—LATEST

289.50

With f2 coated Summicron, coupled rangefinder, flash synchronization. Used.

Trade your Leica IIIFT for new M-3 for additional 149.50
Complete price list available for Leica lenses and other equipment at money saving prices!

EXA—1956 MODEL

34.95 BODY ONLY

Single lens reflex uses all Exakta lenses and accessories.

with 50mm f3.5 Zeiss Tessar AND 100mm f4.5 Tele	84.95
with 50mm f2.6 Wetzler	42.95
with 50mm f2.8 Westenar Automatic	104.50
with 50mm f2.8 Tessar Automatic	134.50
with 50mm f2 Westagon Automatic	124.50
with 50mm f2 Biotar Automatic	170.00
with 50mm f1.9 Xenon Automatic	184.50

Complete price list on Exa available upon request.

PRAKTIFLEX AUTOMATIC

86.95

With 50mm f2.8 Automatic Westenar 35mm single lens reflex, focal plane shutter speeds to 1/500. Built-in sync, flash, strobe. Coupled automatic film transport and shutter cocking. Used.

Praktiflex with 50mm f2 Auto Westenar	115.50
Prismatic eye level finder	12.50
Eversally carry case	8.50
Microscope adapter	10.95
Bellows extension	12.95

CONTAFLEX I

89.50

Single lens reflex eye-level prism camera with ground glass rangefinder, automatic diaphragm with Zeiss Tessar f2.8 lens, synchronized, used.

Contaflex II (used) 109.50

Telephoto and wide angle lenses, close-up lenses and attachments available. Money-saving price list free upon request.

PRAKTINA FX

NEW 297.50 **139.50** USED

with Pentaprism eye level viewfinder AND split-image rangefinder and 58mm f2 Zeiss Biotar lens with FULLY AUTOMATIC DIA-PHRAGM.

The new Praktina FX is the most advanced 35mm precision single lens reflex camera in the world. Free literature and complete listing of new and used Praktina FX cameras with hundreds of lenses and accessories is available. Ask for yours today.

WE BUY CAMERAS
Highest cash prices paid for your camera, lenses and equipment.

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ONE East 43rd STREET • NEW YORK 17, N. Y.

1. 30-Day Absolute Money-Back Guarantee!
2. Written Full Year Guarantee!
3. 5-Year Service Guarantee!

TWINLENS REFLEX CAMERA FANS—SAVE UP TO 50%!

FIELD LENS $2.00

A SENSATIONAL SPIRATONE EXCLUSIVE WORTH 2½ TIMES AS MUCH

A flat thin Fresnel ring plate which fits over groundglass in your reflex camera, greatly increasing brilliance of viewing image, making the often almost invisibly dark corner image ten times brighter! No installation—just drop fieldlens onto groundglass. **Postpaid.**

Deluxe Field lens with clear centerspot for easy focusing $2.49

For Rollei, Graflex 22, Ciroflex, Rieddflex, Minolta, etc.

MAGNIFYING HOOD $2.95 PPD

FOR ALL TWIN LENS REFLEX CAMERAS

Twin magnifier makes possible accurate focusing and composing of entire groundglass image with BOTH EYES and at comfortable distance, while protecting ground glass from glare. Saves eyestrain, helps accuracy, dim light focusing. Instantly removable and collapsible. For Rolleis, Graflex 22, Ricoh, etc.

COMBINATION OFFER: Magnifying Hood plus deluxe Fieldlens $4.50

2¼ SQ. GLASS BINDERS AS LOW AS 5¢ Ea. in quantities

At last—an economical type on mount with 2¼ x 2¼ outside dimensions to fit standard viewers, projectors. Each binder comes complete with two glasses. *Sh. Wts. 4, 7, 12 & 36 lbs.*

50 for $3.85—100 for $6.95—400 for $24.00—1200 for $60.00

Sample Package of 12—$1.25 *postpaid*

EYELEVEL FINDER for ROLLEI, CIROFLEX GRAFLEX 22, MINOLTA

REG. $7.95

$4.98

- **At last — an expensively finished optical device which shows a right side up image for easy eyelevel focusing!**

Clips instantly on and off Rollei hood! Highly corrected optics, all metal construction. Name camera when ordering. *Shipping Charge 20c*

NOW—for the Twin Lens Reflex Fan SPLIT-IMAGE RANGEFINDER

IN FOCUS — OUT OF FOCUS

- **For Rolleiflex, Rolleicord, Ciroflex, Graflex 22.**
- **Breaks straight lines at an angle until perfect focus is reached.**
- **Wonderful for poor light focusing**

Rangefinder is built into groundglass which replaces your present groundglass. Complete instructions supplied; simple installation for your local mechanic can do it at nominal cost! A "must" for the photographer who insists on perfect focus. Reg. $4.95. **With deluxe fieldlens $4.49 ppd.**

$2.49 PPD

WIDEANGLE BUYS!

FAMOUS GERMAN WIDEANGLE FOR 4x5"

$15.95 *Shpg. Cost 35c*

IN FAMOUS MAKE X-SYNCH SHUTTER

Covers approx. 85 degrees, and one half of the lens can be removed, converting it into telephoto double the original focus length.

Commercial photographers and advanced amateurs alike have waited for just such a buy! Made by Leitmeyr, an old-time German optical manufacturer, the 105mm f 6.8 coated wideangle anastigmat is for the 4x5 press camera owner just "what the doctor ordered". The popular shutter has speeds to 1/200th, B and delayed action, and built-in flash. **Lensboard for Graphic, state model. $2.00**

FAST f:1.9 WIDEANGLE FOR 8mm $19.95

Save 50%

Never before could moviemakers get so fine and so fast a six element, coated, color corrected 7mm wideangle lens, with clickstops and filterholder for so little! Available for most 8mm movie cameras—name yours when ordering

Famous Make German 35mm f:2.5 Wideangle $64.95

for Kine Exakta, Exa, Praktica, Contax S, D etc.

Six elements—preset diaphragm—coated—superbly color-corrected—distortion-free corner to corner sharpness—64° coverage (normal 50mm lens covers 39°)—focuses from 1½ ft!

Deluxe Leather Case $2.00 *Shipping Charge 25c*

65mm WIDEANGLE for 2¼ x 3¼ $19.89

- **9 speed Compur Rapid shutter, to 1/500, with X synch for flash and strobe.**

Another Leitmeyr made wideangle lens, 65mm f 6.8, covers about 85 degrees on the 2¼x3¼ negative. Its symmetrical construction permits use of either half of the lens as a 130mm telephoto. **Lensboard for Graphic (state model) $2.** *Shipping Charge 25c*

Nothing like it for less than double!

20 FT. REMOTE SHUTTER RELEASE

Gently acting through airpressure, rubber hose chrome cylinder, valve and hose connector to fit virtually any camera.

$3.98 LEICA MODEL *Shipping* 25c EXTRA *Charge 25c*

Top Grain Cowhide JUMBO PRESS BAG $15.89

16" x 17" x 6" the size bag you expected to pay $50.00 for! And made of a beautifully finished topgrain cowhide, too! No zippers—just bend cover back and everything becomes accessible. Felt covered adjustable partition, imported hardware, long shoulder strap, attached to strap around bag for easy carrying of tripod. *Shpg. Wt. 6 lbs.*

ECONOMY SIZE, 11" x 9" x 6" same construction as above **10.49**

LONG ISLAND Camera Fans: visit our conveniently located Flushing store for your needs.

8PC. DELUXE MANSFIELD ACTION EDITOR

SAVE 50%

8MM MODEL Reg. $59.50 **$29.75**

FREE with Deluxe Action Editor: Elegant Reelchest, for 12 reels (specify 200, 300, or 400 ft. cap.) *Shpg. Wt. 12 lbs.*

16MM MODELS, same as 8mm but with 2,000 ft. rewinds, reg. $69.50 **$34.75**

Diecast base comes readily apart for compact storage. Action Viewer has focusing AND framing control, projects brilliant image on 2x3" screen. Easy to thread, scratchproof, scientific ventilation of lamphousing. Complete Outfit: Viewer, 3 piece base, automatic master splicer, cement, pair of 1200 ft. rewinds.

4 pc FAMOUS MAKE 8mm EDITING OUTFIT $10.95

A value like never before!

SAVE $10.55

Outfit contains Projection Editing Viewer, with bulb, pair of rewinds with brakes, all metal splicer, all ready for simple mounting on board or table (not supplied). Can you afford to pass up such a value? *Sh. Wt. 6 lbs.*

Same outfit, but with automatic splicer $12.95

SUPER DELUXE 8mm EDITOR

$14.95

Same viewer, rewinds as above, but with automatic splicer, plus metal base—a $26.00 5 pc. set. *Sh. Wt. 6 lbs.*

Same outfit, but with new Folding Rewinds, for maximum compactness $16.95

8mm ACTION VIEWER

$16.89

- **Projects brilliant 2" x 3" pictures in full action on the built-in groundglass screen—not just one frame at a time, but in continuous motion.**

A viewer which makes editing a real pleasure. Easy to thread, scratchproof, scientific ventilation of lamphousing — really a blessing for movie fans with a limited budget who know they'd have to spend $40.00 and up for a viewer like it! *Sh. Wt. 4 lbs.*

16mm Mod $17.95

CINE TITLER

REG. $5.95 — For 8mm & 16mm — **$3.59**

SAVE 40%

Titles add action, provide continuity for your movies! Yet making titles is so simple with the Cine-Titler! Sturdy metal construction. Auxiliary lens for exact focus. Photograph picture post cards, titles of your own design; you can even shoot animated titles—an instruction booklet accompanies every titler. *Shipping Weight 4 lbs.*

If purchased at the same time as Action Viewer, Action or Super Deluxe Editor

Titler alone $4.64

Light Att. for Titler $3.95

SALE IN METAL REELS and CANS

8mm { 200 ft. sets 6 for 2.99; 400 ft. sets 5 for 3.49; 300 ft. sets 5 for 2.98

16mm — 400 ft. sets 4 for 2.89

Ship. Wt. per lot 5 lbs.

8mm PROJECTION EDITING VIEWER

You'll more than ever enjoy editing your movies when you use this neat, all-metal, electric editing viewer. It projects a clear image on the ground glass, makes possible viewing from a comfortable distance. *Shipping Weight 8 lbs.*

$6.95

KOILED FLASH CORD $1.98

- **Now available for most shutters.** *Sh. Chg. 10c*
- **Patented coiled cord extends to 4 ft., yet coils up without effort to only 7".**

So handy when you want to hold flash away from camera, place electronic flash closer to subject than camera! Available with standard polarized household type plug for Heiland, etc., and prong-type for Kalart to fit Compur, Prontor S, ASA (Kodak), Solenoid, Argus C3, C4, Realist, Praktiflex and Exakta synchronized terminals. *Name gun, camera when ordering*

NEW KOILED CORDS: Rollei Lock, Nikon S-2, Canon, Belsey Jubilee. **$2.25**

SYNCH YOUR OLD CAMERA

- **Fully adjustable mechanical tripper, requires no installation, works through standard cable release socket of most old cameras. Has fitting for standard flash cord.**
- **Allows adjustment for flash bulbs and zero (X) delay for Strobe.**

Tripper with famous make all metal flashgun (Flashgun only is $8.95 value, has bracket, accepts screw base bulbs, bayonet base adapter 39c) **$4.95**

Tripper with BC Fan Flash, with ejector, tester **$6.95**

Shipping Weight 2 lbs.

Spiratone is Proud to Offer the Widest Selection of FAN TYPE POCKET FLASH GUNS

All have collapsible fan-type reflectors, making for extreme compactness, without any loss of reflector efficiency! Every model accepts standard bayonet base (No. 5, 5M, etc.) bulbs, comes with flashcord for German or ASA bayonet shutters!

'Economy' Model, uses penlite batteries, with ejector **$2.99**

'Standard BC' Model, similar to Economy, but with popular BC Condensor **$3.99**

'Deluxe BC' Model, has larger reflector than standard, and bulb battery tester built-in **$4.99**

'Super Deluxe BC' Model, has all the features of Deluxe, and extension outlet, topgrain leather case, interchangeable cords **$6.99**

'Super Koil Kord BC', same as above, but with 4 ft. Koiled Kord, for almost any camera or shutter **$8.99**

For use of guns on Exakta, Praktica, Leica M3, Argus C3, C4, Realist—add $1.00 (exc. on Super Koil Kord BC). Standard flashbracket, fits any gun — $1.00; deluxe adjustable bracket $1.75; BC battery for BC models, lasts year $1.00. *Ship Charge 35c — Name camera*

TESTED 35mm RELIABLE

FREE 36 EXP. MICROFILE the film with the finest resolution that is so wonderful for copying, all work requiring the ultimate in detail! With your order for 100 ft. of bulkfilm or $5.50 worth of cartridges (20 or 36 exp.).

FRESH SAFETY KODAK B&W FILM

All four popular speeds, Panatomic X (Background X), Plus X, Super XX and Tri-X are available in 27½ ft., 50 ft. and 100 ft. lengths and 20 and 36 exposure reloads.

27½ FT. $1.39 — 50 FT. $2.29 — 100 FT. $3.98

Shipping charges 10c, 30c, 30c

COMBINATION SPECIAL

Daylight loader with 5 cartridges and 100 ft. of Kodak or 50 ft. of Adox black & white film, a $9.99 value *Shpg. Wt. 4 lbs.* **$7.99**

BLACK & WHITE RELOADS

in metal cartridges may be assorted

20 EXP. 6 for $2.00 — **40c** ea.

36 EXP. 4 for $2.00 — **60c** ea.

Shpg. Chgs. 1 or 2 5c; 3 to 6 20c; 7 to 12 35c.

ALL YEAR B&W ASSORT.

Daylight loader with 5 cartridges plus 27½ ft. each of Panatomic X, Plus X, Super XX and Tri-X **$10.49**

35mm DAILYLIGHT LOADER

INCLUDING 5 CARTRIDGES

$4.95 IF PURCHASED TOGETHER WITH MINIMUM OF $7.95 WORTH OF BULKFILM.

It's so simple to take advantage of the exceedingly low cost of 35mm bulkfilm and to load any desired length into a standard Eastman cartridge. First few reloads already make loader pay for itself! **Loader alone with 5 cartridges, $5.95** *Sh. Wt. 4 lbs.*

DELUXE LOADER, with automatic counter, accepts also Leica, Contax cartridges — $10.95 or add $5.00 to Loader comb. offer.

FREE FILM TONGUE CUTTER with your order for $5.00 or more of bulkfilm, or $4.25 worth of bulkfilm plus loader. For perfect shaping of tongue to assure smooth loading. Must be requested at time of purchase.

ANSCOCHROME INCLUDING PROC. FOR ASA 128

35MM REL. 20 EXP. **$2.59** 3 for $7.59

120 OR 620 **$2.39** ea. 3 for $6.89

Spiratone is proud to be first to offer the new Anscochrome with the revolutionary speed increasing processing described in the June '55 issue of "Photography," enabling you, for the first time, to take fast action shots, shoot in poor light, as you would with a fast B&W film!

Save on fresh 35MM ADOX FILM IN CARTRIDGES AND BULK

Your choice of KB14, KB17, KB21 *Shipping Charge 10c*

20 exposure reload **60c** — 3 or more (may be assorted) **50c** each

36 exposure reload **65c** — 3 or more (may be assorted) **70c** each

50 ft $3.75, 100 ft. $6.89 — *Shpg. Chgs. 25c per 50 ft.*

2 x 2 GLASS SLIDEBINDERS

- **Comparable to 6c slidebinders.**
- **One of the finest methods of mounting transparencies (35mm Argus, Leica size) betw. glass!**

2½¢ ea. in Quantities

The biggest bargain in quality slidebinders ever offered. Pregummed Fibreboard, self-centering of slide, provision for type on titles, dustproof, lightrec, shockproof—all these advantages are yours for less than the usual cost of glass alone! Why risk fingerprints and scratches on your irreplaceable color shots? **200 for $5.75**

Shipping Weight 5 lbs.

Sample package of 20 2x2 glass and 3 2x2 metal binders, postpaid **$1.25**

200 singleframe (Mercury) Masks $1.75 (Masks fit glass

200 Square (Robot, Tenax) Masks $1.75 (& metal binders

2x2" cardboard mounts for single frame (Mercury size) transparencies **50 for 55c** *Sh. Wt. per 100, 1 lb.*

800 for $20.95

2400 for $60.00

SAVE UP TO 50% ON Remote Control Unit For Airequipt

Now you can operate your Automatic Slide changer (Airequipt, Brumberger) at distances up to 15 ft — a feature you'd have paid $50.00 more for in other projectors!

WAS $29.95 — **$14.95** when bought with 12 or more magazines

36 slide MAGAZINES with storage box and cover **2 for $3.18 12 for $18.95** *Sh. Wts. 2 & 6 lbs.*

12 magazines and Remote Control $33.90 — **Remote Control (when bought alone) $19.95** *Sh. Wt. 1 lbs.*

6 magazines, in famous make luggage style case, alone a $10 value (holds 12) $13.95

AUTOMATIC CHANGER, with 6 magazines, for almost any 2 x 2" projector (name yours) $18.95

SLIDE TRAYS for REVERE 553, 555, 888

Sturdy trays, hold 36 cardboard and glass slides, intermixed, with index, in cardboard filing box.

2 for $1.69 — **12 in carrying case $8.95** *Shpg. Wts. 2 lbs. and 6 lbs.*

REVERE 888 SPECIAL: Remote Control 15 ft. Release plus 12 slide trays in Carry Case $12.49

SLIDE TRAYS for TDC, VIEWLEX

LOWEST PRICES EVER!

30¢ ea. in lots of 120 with index.

Changomatic and Projectomatic

Extra strong plastic trays, hold 30 cardboard and glass slides, intermixed, with index.

4 for	12 for	48 for	120 for
$1.95	$4.98	$17.95	$36.00

Shpg. Wts. 3, 7, 22, 50 lbs.

12 Trays in Carrying Case (lit.) $5.98, in metal deluxe case $8.89

SAVE 50% ON DELUXE POCKET RANGEFINDER

$2.89 A super-imposed image rangefinder with external adjustment settings and a unique collapsible accessory shoe, to fit all cameras. Accurate, easily read settings from 3 to infinity, all metal construction, modern styling! Fine Leather Case, reg. 89c, if bought with rf only 49c

S&Ch Inc.

ANOTHER "FIRST" BY SPIRATONE

FOR ALL **8MM** FANS!

For Only $27.95

KINOSCOPE

LIFETIME GUARANTEE

WIDE SCREEN SYSTEM

SHOOTS More Picture!
PROJECTS More Picture!

It's like watching Cinemascope in your neighborhood theater . . . but these movies are taken with your **own** camera, shown with your **own** projector, in **your** home!

ONE LENS DOES IT ALL!

50% more horizontal sweep . . . cuts down film costs . . . saves panning . . . super-realistic 2:1 screen ratio.

A genuine anamorphic optical system, wonderful for both color and black & white. **KINOSCOPE** has better light transmission than $75.00 anamorphic lenses, is hard-coated and precision produced in Rochester, New York, home of the world's finest optics.

KINOSCOPE fits virtually all 8mm cameras* and projectors—no installation—uses standard filters as usual.

**KINOSCOPE fits Series C (Tiffen, Ednalite) filter adapters — if you do not have one, we can supply same at $1.45. Describe your camera and lens when ordering.*

Fits ANY 8MM CAMERA & PROJECTOR

TURN PAGE FOR MORE SPIRATONE VALUES

SPIRATONE
The Lens Accessory Specialists

MINUS LENSES GIVE YOUR LENS TELEPHOTO VISION

If your camera is capable of using a bellows or extension tube set, you should thrill to the idea of being able to take telephoto shots without buying a regular expensive telephoto lens . . . or you can obtain extreme close-ups in conjunction with your regular telephoto lens. For example, a single Minus 4 lens makes your 135mm telephoto into a 270mm telephoto —varied combinations will produce a variety of effects. Minus Lenses improve the perspective in portraits, too, by lengthening the effective focus length. **Minus Lenses are mounted in Metal Rings and are sold in sets of three (of your selection) or four. Available in Minus 1, 2, 3, and 4.**

	PER 3	PER 4
SER. V	—$3.60	—$4.70
SER. VI	—$4.35	—$5.65
SER. VII	—$6.00	—$7.80

Shipping Charge 10c.

CLOSE-UPS TO 3½" WITH CLOSE-UP LENSES

The perfect accessory that can be used with any camera. You can get close-ups from 3½" to 38". Simple to use, permits a simple camera with a regular 3' setting to take portrait pictures or even do copy work . . . now close-ups of insects, flowers and macrophotography, possible with this inexpensive tool.

	Plus 1 from 38" to 20"	Plus 2 from 20" to 13"	Plus 3 from 13" to 10"	Plus 4 from 10" to 8"	Plus 5 to 7"	Plus 6 to 5½"	Plus 10 to 3½"
SER. IV	$1.15	$1.15	$1.15	—	—	—	—
SER. V	1.39	1.39	1.39	$1.75	$1.95	$2.25	$2.65
SER. VI	1.59	1.59	1.59	2.00	2.30	2.75	3.25
SER. VII	2.98	2.98	2.98	3.25	3.75	4.25	5.25

All close-up lenses except Plus 10 are mounted in metal rings
Shipping Charges 10c.

Most Useful Accessory for All Films!

Save up to 60% with Spiratone

POLARIZING FILTERS & SCREENS

For all Color and black and white film. Eliminate glare and reflections in scenery, water, show-windows . . . emphasizes clouds, the ONLY sky filter usable with Kodachrome, Anscochrome, Ektachrome. Polarizing Screens have double threaded rings to allow use of extra filter or close-up lens, handle for convenient adjustment of maximum polarizing effect.

	Polarizing Filter	Polarizing Screen
SER. IV	—$1.49	— $3.75
SER. V	—$1.49	— $3.75
SER. VI	—$1.98	— $4.75
SER. VII	—$2.79	— $5.75

Shipping Charge 10c.

PRICES SLASHED IN HALF!!
HIGHEST QUALITY OPTICAL GLASS
FILTERS

COATED Imported SCREW-IN FILTERS and Lenshoods

Screw-in and Bayonet filters permit closing camera case without removing filter, and are custom-made for each camera.

Red, Green, Yellow, 80B, 85C, Skylight Filters; Screw-in Lenshoods
for Argus C-3, $1.49 ea. 3 for $4.29
for Retina f:2, 2.8 (all models), Contaflex, Contessa, Signet, Argus C-4 $2.29 ea. 3 for $6.59
for Contax Sonnar; Exakta, Praktiflex, or Pentacon with pre-set Tessar f:2.8; Westanar, Westagon or Biotar (regular) f:2; Leica Summitar, Summicron, M3 lenses; Nikon and Canon $2.98 ea. 3 for $8.49
for Rollei f:3.5, Minolta Autocord (bay.) $2.98 ea. 3 for $8.49
for Pre-set and automatic Biotar f:2 $4.98 ea. 3 for $14.29

COATED FILTERS IN SERIES SIZES
to fit standard filterholders

For B. & W.: Lt. Yellow, Med. Yellow, Green, Red, Orange, Haze.

For ANSCOCHROME DAYLIGHT: UV15, UV16, 82A.

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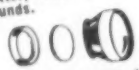

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and have, instead, managed to turn the wide-angle's great advantage into a profound handicap because pictures pulled out of small sections of the negative could far better have been made with longer lenses with narrower angles of view.

Nowadays it's becoming fashionable to refer to the 35-mm lens as a "semi-wide-angle." The reason is that after nearly twenty years of pushing the 35-mm focal length and making only a few, very slow, 28-mm lenses, the manufacturers have suddenly decided to produce lenses which previously were alleged to be impossible to construct. At least four European and Japanese manufacturers are now turning out 28-mm lenses with f/3.5 apertures, and one, Canon, has a 28-mm f/2.8. The 28 covers a field of 75 degrees, and this burst of speed has aroused new interest in its potentialities. Perhaps the most amazing of the new crop of wide-angles is the 21-mm f/4.5 Zeiss Biogon which covers a diagonal field of view actually slightly greater than 90 degrees. Closest competitors of the 21-mm Biogon are the 25-mm Nikkor and Canon lenses (f/4 and f/3.5 respectively) which cover a field of 81 degrees.

Fields of 75, 81, and 90 degrees mean that an awful lot of the world around us is going to be compressed into our negatives, and the effective use of 28-, 25-, and 21-mm superwide-angle lenses requires more than a little effort on the part of the photographer. The challenge of these superwide-angle lenses is that because these lenses discriminate less, and seem to include just about everything in front of them, the photographer must be just that much more discriminating in working with them. The pitfalls are obvious, but so is the promise of achievement.

From a technical point of view it is important to recall that when any camera, regardless of focal length, is tipped off axis the geometrical relationships which we are accustomed to accepting become distorted. Stand on the ground and tip your camera up at a tall building and you'll produce a teepee effect in which the parallel sides recede into a point. Reverse the procedure and tip your camera down from a high vantage point and you can create an upside-down pyramid effect.

Under normal shooting conditions with normal focal-length lenses we hold our cameras sufficiently squared to existing horizontal and vertical planes so that slight tipping of the camera one way or the other doesn't make very much difference. Do the same with an extreme-wide-angle of 28-mm or shorter focal length, and the added subject matter will frequently cause a catastrophe in which parallel lines zoom away from each other.

The size relationship between objects at different distances from the camera becomes exaggerated at very short camera-to-subject distances. Because the wide-angle lens includes relatively large subject areas there is a constant temptation to use these lenses at excessively short shooting distances. When some objects in the picture are very much closer than others, these subjects will appear excessively large. Such size distortion can

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frequently be used effectively—as in the example of Sen. Kefauver's outstretched hand—but more often this exaggeration of foreground objects is objectionable. This is particularly true of portraits made from very close shooting distances which tend to enlarge the nose in relationship to the eyes and the ears.

The wide-angle lens therefore presents problems of its own while solving other problems. Its primary application occurs when shooting conditions do not permit backing away sufficiently to include a required amount of subject matter with a normal-focus lens. Secondarily, the short-focus wide-angle lens can be exploited for its extreme depth of field. This feature is, however, subject to misinterpretation

Depth of field is a matter of image size on the negative and the degree of enlargement used in making the print. If a 25-mm lens is used at five feet, and a 50-mm lens at ten feet, we will obtain equal image size and, at any given *f*-stop, both lenses will give identical depth-of-field characteristics. If we later enlarge the 50-mm negative ten times and the 25-mm lens negative twenty times, the short ultra-wide-angle will actually show less depth of field in the print. The photographer who shoots with a short-focus wide-angle lens, and then makes excessively large enlargements from small sections of the negative is actually gaining no increase in depth of field. What he is gaining, however, is increased angle of view and decreased image size.

The wide-angle lens is one of the most valuable tools available to the 35-mm man. Today's wide-angle lenses are faster and wider than ever before with maximum apertures of *f*/1.8 and focal lengths down to a mere 21 mm. They're almost indispensable for solving many problems, but like other valuable tools they pose problems of their own which must be mastered before their full potential can be realized.—

Why Use a Long-Focus Lens?

(*Continued from page* 44)

long-focus group to the 150- to 300-mm long-focus and 400- to 1,000-mm Big Bertha groupings. The specific application of these many focal lengths is governed by a number of considerations. The longer the lens the greater the image size, the less the field of view, and the shallower the depth of field. In addition, once you're in the really long-focus category, size, weight, bulk, and clumsiness in operation begin to take their toll, and camera vibration becomes a serious problem, even with sturdy tripods. The best rule, from a general point of view putting emphasis on simplicity, ease of operation, and unobtrusiveness, is to choose the shortest tele-lens focal length which will do the job for you. This will to a very large extent depend upon the choice presented by the type and make of camera which you use.

The long-focus lens is a photographer's answer to the problem of how to photograph from a distance and still obtain necessary image size in the negative. The adjective "long," like the "wide" in wide-

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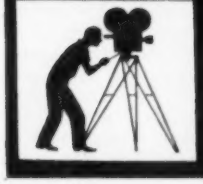
4x5	DWG	3	144	1.00
7½x7½	Aero	1	144	1.00
7½x7½	SWG	0	144	1.00
8x10	SWG	2-4	100	2.95
8x10	SWSM	4	100	2.05
8x10	SWSM	3	144	2.75
8x10½	SWSM	1	144	1.25
8x10½	LWFSM	3-4	100	1.50
8x10½	LWFSM	2-5	144	1.90
8½x11	LWFSM	2	50	1.00
10x10	SWSM	1-2-3-4	100	1.95
10x10	SWSM	3	144	2.75
10x10	SWG	1-2-4	100	2.45
10x10	SWSM	1	144	2.45
10x10	LWFSM	2-3	250	3.50
10x10	SWSM	2-3	250	3.50
11x14	LWFSM	2-3	50	2.15
10x20	SWSM	2-3	100	3.75
18x22	LWFSM	1-2-3-4	50	5.50



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angle is used in relation to the normal 50-mm focal length. Since the long-focus lens takes in less subject matter from any given distance, but spreads this over the same negative area, objects photographed with a long lens are proportionately larger than they would have been if photographed from the same distance with a shorter lens. A second characteristic of longer focal lengths is reduced depth of field, although this condition is much exaggerated, as we shall see later.

Long-focal-length lenses for the miniature camera range from the 75- to 135-mm medium-long-focus group to the 150- to 300-mm long-focus, and 400- to 1,000-mm Big Bertha groupings. The specific applications of these many focal lengths is governed by a number of considerations. The longer the lens, the greater the image size, the narrower the field of view, and the shallower the depth of field. In addition, once you're in the really long-focus category, size, weight, bulk, and clumsiness in operation, all begin to take their toll, and camera vibration becomes a problem even with sturdy tripods. From a general point of view, placing emphasis on simplicity, ease of operation, and unobtrusiveness, the best rule is to choose the shortest tele-lens focal length which will do the job for you.

By far the most widely used tele-lenses are the medium-long 75- to 135-mm focal lengths. These lenses are the lightest, most compact, and easiest to use of all the teles, and couple directly to the rangefinders of interchangeable-lens miniatures. Many are also very fast and 75-, 85-, and 90-mm lenses are available as f/1.5s and f/2s. These lenses are much prized for portraiture because they nearly fill the frame with the subject while still leaving a comfortable amount of space when used at distances chosen to give realistically pleasing perspective. More than this, lens apertures like f/2 and f/2.8 provide a pleasing falling off of sharpness in the background and permit portraiture without an excessive amount of extra lighting, in order to create more natural and spontaneous expressions.

These lenses are also widely used for covering all sorts of action when circumstances render shorter focal lengths impractical. In photographing action with a tele-lens, we must compromise between image size, field of view, depth of field, and lens speed. If we consider image size alone we must automatically accept a smaller field of view, shallower depth of field, and a very much slower lens. The medium-tele is usually the answer. With image size from 50 to almost 300 percent greater than with the standard 50-mm focal length, and fields of view from 18 to 32 degrees, these lenses still provide a fair amount of field depth and ample lens speed.

Sometimes, however, they're just not long enough, and we must turn, pocketbook permitting, to the long-focus and very-long-focus heavy artillery of the miniature camera. (*Thinking about these lenses reminds us of Ansel Adams' famous remark in the 1938 classic,* MINIATURE CAMERA WORK. *Said Adams, "One man's miniature-camera outfit may be another man's safari."*) With the excep-

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tion of a few borderline cases such as 150- and 200-mm lenses of modest aperture, these lenses share a number of objectionable characteristics. They're terribly expensive. They're big, clumsy, heavy. They cannot be focused with miniature-camera coupled rangefinders, once they pass the 135-mm high-water mark. They require tripods, although some photographers do manage to hand-hold long lenses at relatively high shutter speeds. But they do enable us to make pictures which would be almost impossible without their ability to reach out and bring in small objects from great distances.

No article about long lenses is complete without repetition of this pure, absolute, but widely misunderstood or disbelieved, truth: *Lenses and focal lengths regardless, only distance creates perspective.* There's just no such thing as "long-lens perspective," or "wide-angle perspective," for that matter. Pictures made with long-focal-length lenses from great distances do exhibit a characteristic flatness, and objects which are really very far apart give the appearance of being piled up on top of each other. But this was caused by the camera-to-subject distance, not the focal length. If we were to switch lenses and substitute a 50-mm lens, or even an extreme-wide-angle, in place of the long-focus lens, and then enlarge the area covered by the long lens from the negative shot with the shorter focal length we will always find that the perspective is identical. The reason for the long lens is simply that making huge blow-ups from negatives made with lenses of short focal length in order to capture distant detail results in a considerable loss of definition and a tremendous increase in print graininess.

Another long-lens talking point is depth of field, a property which is, of course, inversely proportional to focal length. The longer the lens, the less the depth of field. To see just how important this is, let's look at the comparative depth of field of a 50- and a 250-mm lens, both stopped down to *f*/5.6:

Focused on an object 3 feet away, a 50-mm lens at *f*/5.6 will be sharp from approximately 33 to 40 inches. At the same distance, the depth of field of a 250-mm lens at *f*/5.6 will extend from about 35 to 36.06 inches, a total depth of only 1.06 inches.

At 6 feet, the 50-mm lens' depth ranges from about 5 to 7½ feet, while the 250-mm lens will give acceptable sharpness from approximately 5½ to 6¼ feet. The difference here is a belt of sharpness roughly 2½ feet deep for the 50-mm lens, and just under one foot for the 250-mm.

At 12 feet, the 50-mm is sharp from about 8½ to 20 feet, giving 3½ feet of depth in front of the subject and 8 feet behind. The total depth of the 250-mm lens at this distance will extend from 11 to 13 feet, a foot in front, and two feet behind the point of focus.

If we're off by one foot, and the focus is set at 11 feet, the farthest limit of our depth of field will be some 10 inches in front of our 12-foot-distant object. With the focus at 13 feet we'll just barely come in at the 12-foot mark, but anything in front of this point of focus will be blurred. At 3 and 6 feet the tolerance is so small as to be negligible, and we're either in or out, there's no middle ground.

Bad as this may sound, it doesn't really make very much difference for the eminently practical reason that a long lens such as the 250-mm is almost never used for such close-in work. In order to appreciate the practical implications of the long lens' limited depth of field we must consider the distances at which such lenses are used, and for which they were created.

At a distance of 25 feet, the 50-mm lens at *f*/5.6 is in focus from approximately 13 to 150 feet. At this distance, the 250-mm lens, still operating at *f*/5.6, will give us everything from about 21 to 30 feet. This is nine solid feet of sharpness, and not to be sneezed at.

From 50 feet, the 50-mm lens is in focus from about 19 feet to infinity; the 250-mm from 37 to 75 feet. At 100 feet, the 50-mm covers from about 23 feet to infinity; the 250-mm from 60 to 300 feet. At 200 feet, the 50-mm depth extends from 26 feet to infinity; the 250-mm from 86 feet to infinity. All of which goes to show that when the long focal length is used at the shooting distances for which it was designed, depth of field is no longer the bogeyman it's often cracked up to be.

Actually, depth of field is merely a matter of image size. If the short-focal-length lens is moved sufficiently close to the subject so that it produces exactly the same image size as the long lens draws from a distance, then the depth of field at any given aperture will be exactly the same. A 25-mm ultra-wide-angle lens used from a distance of 4 feet will produce exactly the same image size and depth of field as a 500-mm lens at 80 feet, a 250-mm lens at 40 feet, or a 50-mm lens at 8 feet. The advantage of the long lens is that when we can't move in to 4 or 8 feet, it will turn the trick from distances such as 40 or 80 feet. The depth of field of short-focal-length lenses at long camera-to-subject distances is impressive mainly in depth-of-field tables because the scale of distant objects recorded on the negative will be so small as to be almost lost. And, it must never be forgotten, if we enlarge our short-focal-length negative to match the field of view of a lens of much longer focal length, depth of field will be identical in both cases. But, the long-lens shot, having been enlarged far less, will be a lot sharper, to say nothing of being considerably finer-grained.

A long lens is a useful member of any photographer's optical arsenal, enabling him to reach out and grab pictures that in some cases just can't be made with shorter lenses, as well as to use intermediate distances for advantageous perspective effects in portraiture and other applications. They should be employed only when a specific distance effect is desired, or when conditions beyond the photographer's control makes them necessary. Possibly their greatest drawback lies in the effect they have on some photographers who come to believe that a long lens is a substitute for the candid, unobtrusive approach required to work in close to your subjects. The word is *alternative*, not *substitute*.—

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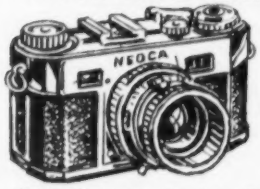

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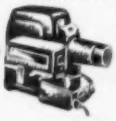

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35-mm Goes to Press

(*Continued from page 47*)

cant thing about this 35-mm revolution is not merely the acceptance of the miniature camera, but the fact that its extensive use is now a matter of routine working procedure. Present plans call for equipping most of the 17 staffmen with 35-mm cameras and eventually raising the 30- to 40-percent figure for general news coverage to about 75 percent.

Like all historically successful revolutions, this one was a long time a-borning. Actually, the *Journal*—and other papers—started flirting with miniature cameras almost 30 years ago. At first there was wide interest in the little camera's ability to produce candid photographs under difficult shooting conditions. This early advantage, however, was canceled by the introduction of the flashbulb. The new, self-contained light source permitted press photographers to shoot without regard for existing lighting conditions, and the great flash era was inaugurated. Not only did flash devalue the 35-mm camera's flair for available-light photography, but the miniature's focal-plane curtain shutter presented obstacles to flash synchronization that have only recently been conquered.

But throughout the decades in which the miniature was at best an extra camera, carried as insurance in case one's holders ran out, it was never completely forgotten. One of the people who didn't forget the little gadget that made 1x1½-inch pictures on double-perforated movie film was Bob Dumke, former Chief Photographer of the *Journal* and now Production Research Coordinator.

Keeping abreast of technical progress in 35-mm cameras, lenses, films, and developers, Dumke became convinced that the 35-mm camera's many advantages could more than outweigh the inherent disadvantage of its small negative format. By late 1953 he persuaded the paper's executives that the 35-mm was worth investing in. Several staffers were encouraged to use the miniature camera whenever they felt it could be turned to advantage. The results were so gratifying that within a year top management was sold on the experiment. The process of equipping the photographic staff with 35-mm cameras was begun.

On a newspaper, the key picture man is the picture editor who assigns photographers either directly or through the photo department. He also has the primary say about what pictures get into the paper, and where, when, and how they will be used. The case for and against 35-mm can only be realistically evaluated in terms of the picture desk. I therefore sought out the *Journal's* Picture Editor, Bob Gilka, from whom I got the most rounded story of the impact of 35-mm photography on one of the most picture-conscious dailies in the U. S. To Picture Editor Gilka, the miniature camera is neither a panacea nor a fad. On the plus side, he feels it has four basic advantages for press work:

1. People aren't as self-conscious about having their pictures taken for a paper and don't seem to become as stiff as when they're faced with larger cameras. As a result, there is less standardized posing and pictures of people have a more natural look.

2. Working with 35 mm gives the average photographer a big edge in making a series of related pictures for a layout. He doesn't have to worry about running out of film with 36 exposures in his camera, while the rapid film advance and automatic shutter reset enable him to make a new exposure in the fraction of the time required for film change with a 4x5.

3. The 35-mm camera widens a photographer's ability to shoot by available light—which also helps give pictures a natural look.

4. A 4x5 box and a kit full of holders and bulbs labels a man a "press photographer" and gets him thrown out of a great many places; with a 35-mm camera he can sometimes move around without attracting attention, and often get "forbidden" pictures. In other places where authorities object not to pictures but simply to popping flashbulbs, the miniature camera's available-light capability can get pictures that would be difficult if not impossible with a 4x5.

But what about the disadvantages of 35-mm? Gilka had this to say:

"Its time factor isn't as good for a daily paper," he explained. "We work against very tight deadlines. In the beginning we lost a lot of time until processing procedures were smoothed out. It's better now, but there's still room for improvement.

"There's a big temptation for a photographer to "machine gun" a job—that is, to shoot too many pictures. Even on routine jobs some of our men have a tendency to overshoot instead of thinking out the assignment. As a result, editors sometimes have to look through six or seven sheets of contact prints where one would have been more than we needed. With as many as 36 pictures to a sheet, this really slows us down.

"Another tendency is to rely too much on available light, and to shoot under conditions where the best stuff they have today still can't produce a print good enough for newspaper reproduction."

Gilka believes that most of these faults are in the nature of growing pains. Even the worst offenders seem to be overcoming most of these shortcomings now that the miniature has become less of a novelty. And since the photographers I spoke to readily admitted that they went overboard at times, the problem would seem to be more a matter of individual discipline and self-training rather than an inherent drawback of 35-mm photography itself.

The equipment, materials, and techniques used by the *Journal's* expanding 35-mm contingent more or less follows the patterns set by other 35-mm professionals. The coupled-rangefinder miniature predominates, with what appears to be a pretty even split between Leicas and Nikons, plus a handful of other types including two Contaxes, a Retina IIa, and a Kine Exakta that is used primarily for

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Contax I F2.8 Tessar	41.00	32.00
Contax II F2 Sonnar	74.00	60.00
Contax III F2 Sonnar	89.00	70.00
Contax IIA F1.5 Sonnar	155.00	135.00
Contax IIIA F2 Sonnar	169.00	135.00
Contax IIIA F1.5 Sonnar	179.50	145.00
Leica IIIC F3.5 Elmar	76.50	65.00
Leica IIIC F2 Summitar	96.00	80.00
Leica IIIF F3.5 Elmar	124.50	100.00
Leica IIIF F2 Summicron	174.00	145.00
Leica IIIF F1.5 Summarit	172.50	150.00
Leica M3 F2 Summicron	278.00	240.00
Leica M3 F1.5 Summarit	298.00	250.00
Nikon S F2 Nikkor	107.00	90.00
Nikon S2 F1.4 Nikkor	219.00	175.00

35MM SINGLE LENS REFLEX

	Used Price	Cash or Trade-in
Exa, F2.8 Westar	$ 39.50	$ 30.00
Exakta V, F2 Biotar	97.50	75.00
Exakta VX, F2.8 Auto West	137.50	115.00
Exakta VX, F1.9 Auto Xenon	187.50	150.00
Contaflex, F2.8 Tessar	98.00	75.00

35MM CAMERAS

	Used Price	Cash or Trade-in
Argus C3, F3.5 outfit	$ 32.95	$25.00
Boisey 82, F3.2	24.50	20.00
Argus C4, F2.8	49.50	35.00
Contessa F2.8 Tessar	79.50	55.00
Graphic 35, F3.5 outfit	54.00	40.00
Kodak Pony 135 F4.5	14.75	10.00
Kodak Signet F3.5	39.50	30.00
Kodak Retina II F2	49.50	35.00
Kodak Retina IIA, F2	79.00	55.00
Kodak Retina IIIC, F2	112.00	85.00
Minox IIIS F3.5 outfit	76.50	55.00

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	Used Price	Cash or Trade-in
Argus Auto 300W Case	$ 33.50	$25.00
Golde Manumatic 300W	24.50	18.00
Kodaslide Signet 500W	44.50	30.00
LaBelle 95 Auto 500W	44.50	30.00
Revere 553, Auto 300W	39.50	30.00
Revere 555, Auto 500W	43.50	35.00
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TDC Mainliner 300W	29.50	22.00
TDC Streamliner 500W	46.50	30.00
TDC Duo 300W 2¼x2¼	34.50	28.00
TDC Model D 300W	32.50	22.00
TDC Stereo Proj. 500W	87.50	70.00
Viewlex V33L 300W	28.00	20.00
Revere 888, Auto 500W	74.00	60.00

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Hasselblad /1600 F2.8	276.50	215.00
Ikoflex IIA Auto F3.5	69.50	50.00
Ricohflex VI, F3.5	18.50	12.00
Rolleicord III F3.5 Xenar	57.50	45.00
Rolleicord IV F3.5 Xenar	63.00	50.00
Rolleicord V F3.5 Xenar	85.00	70.00
Rollei MX F3.5 Xenar	113.00	100.00
Rollei MX F3.5 Tessar	121.50	105.00
Rollei MX F2.8 Xenotar	172.00	140.00

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	Used Price	Cash or Trade-in
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B&H 134TA F1.9	97.50	80.00
B&H 252 F2.3	34.50	25.00
Bolex C8 F2.5	53.50	35.00
Bolex H8 Leader F1.9	141.50	115.00
Kodak Brownie F1.9	24.00	18.00
Cine Kodak Mag F1.9	54.75	40.00
Revere 50 F2.8	21.50	15.00
Revere 88 F2.5	30.75	20.00
Revere 84 F1.9 Tur	89.75	65.00
Revere 40 F2.5 Mag.	54.00	40.00
Revere 44 F1.9 Mag.	89.75	65.00
Revere 863 F2.5 Mag.	82.00	55.00

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Keystone K70 500W	39.50	30.00
Keystone K109 750W	73.75	65.00
Kodak Brownie 300W	36.50	25.00
Revere 85 500W	48.50	40.00
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long-lens sports coverage. About half the cameras and lenses are owned by the photographers, and half are issued by the *Journal*.

Elmer Staab, manager of the Photo Department, stressed the point that photographers tend to become opinionated and express personal preferences when it comes to choosing 35-mm equipment. And, as he put it, "there's no sense trying to get a job out of a guy who's unhappy with his equipment."

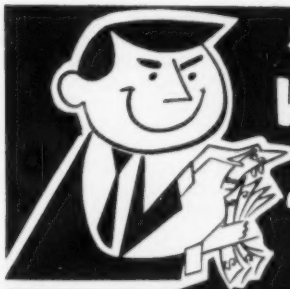
Probably the most extensively equipped *Journal* 35-mm man at present is Tom Abercrombie, who, incidentally, uses a 4x5 only for occasional color jobs. Abercrombie's equipment—partly his own, and partly *Journal* issue—consists of three Leica bodies and some eight or nine lenses ranging in focal lengths from 25- to 300-mm. He is also experimenting with a single-lens prism reflex and a 40-mm Macro Kilar which, he hopes, will prove satisfactory for extreme close-ups on the job without extra equipment.

The two most widely used focal lengths among the 35-mm staffers are the 50-mm normal-focus lens and the 35-mm standard wide-angle. Of the two, the latter probably sees the most service, and it would seem more than a coincidence that this lens covers a field angle almost exactly equal to that of the 127-mm lens which is first in popularity among users of the 4x5 press camera.

Deep-black shadow areas (which occur when available-light techniques are carried too far) constitute a real problem for newspapers because the absorbent newsprint soaks up ink and makes a reproduction darker than the original print. Generally, well-lighted pictures with predominantly light backgrounds reproduce best on newsprint. So, although available light is the order of the day at the *Journal*, all photographers carry either a flashgun or a lightweight, 40- to 100-watt-second speedlight unit. A number of them also carry small, *Journal*-built B-C flashguns powered by penlight batteries and designed to fire tiny General Electric M-2 or Sylvania 8 flashbulbs. This gun, named after its inventor, is referred to as "Abercrombie's Folly."

Interestingly enough, the 35-mm film most frequently used is the very slow—but fine-grained and tack-sharp—Kodak Panatomic-X. When this thin-emulsion film's effective speed index of ASA 50 (*Panatomic-X is nominally rated at ASA 25, but careful photographers often prefer an index of ASA 50*) is insufficient for existing lighting conditions, the *Journal's* lensmen turn to Plus-X or Tri-X. The latter, rated at about ASA 800, is used somewhat more than Plus-X primarily because press assignments are seldom static and almost always require reasonably fast shutter speeds. When I visited the *Journal* recently, its photographers were beginning to test the new Du Pont S-X Pan 35-mm film. (*See story on S-X film on page* 78.)

The two most widely used developers for 35-mm film at the *Milwaukee Journal* at present, are Promicrol and the new American formula, Ethol UFG. Promicrol is used most for available-light shots



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while UFG is the standard soup for normally exposed film. UFG's two important advantages are its extremely short immersion times (averaging three to five minutes on Panatomic-X and five to seven minutes with the faster films), and its remarkably good tank life. The latter obviates the constant need to prepare fresh solutions, and both features are blessedly useful when deadlines are breaking.

Despite the spate of opinions to the contrary, the *Journal's* darkroom has found—as has practically everyone else who's tried it—that 35-mm negatives can be enlarged wet. "Wet" means, of course, that a negative has been carefully rubbed down with a chamois cloth so that most of the surface moisture has been removed. This has done much to remove the black mark against 35-mm on the grounds that it requires additional darkroom time. When the lab is really up against it, they can blast the film in a potent print developer (such as Dektol or D-72), fix it in a concentrated high-speed hypo, and come up with a wet negative in four minutes or less.

All of this will become obsolete when one of Bob Dumke's current projects sees the light of day. This is a continuous processing machine that will operate on the principle of high-temperature spray-development. It will accept a roll of exposed 35-mm film at one end and deliver dry negatives at the other in a total elapsed time of *two minutes!*— they hope. Once this machine is perfected, it will actually be possible to process 35-mm faster than 4x5, and the one remaining bugaboo will be contact-printing the roll. The *Journal's* plans for this read like science fiction and involve the use of closed-circuit TV. It will enable the picture editor to scan negatives televised from the darkroom to his desk in the city room. It sounds fantastic, but then, so is the *Journal*.

Thus far 35-mm has invaded every department from society to sports and has proved itself in all types of work from aerial views to underwater coverage of salvage operations on a freighter that sank in Lake Michigan. Picture pages and roto-section spreads on subjects ranging from the enthusiasm of Milwaukee Braves fans in County Stadium to slum conditions in downtown Milwaukee's Third Ward District are now shot on 35-mm. When the second half of the staff is finally 35-millimeterized, all such assignments will be handled by the miniature.

Does this mean that 35-mm eventually will supplant the larger camera altogether? Probably not. For one thing, as 35-mm man Fred Tonne pointed out, newspictures often require a grab-shot technique in which all a man can do is raise a camera, fire one bulb, and hope he's caught his quarry somewhere on the negative. Granted that the miniature offers very wide field angles and extreme depth of field, lenses of 90- to 127-mm enable 4x5s to cover equally wide field angles with image sizes three to four times larger. When a single figure must be cropped out of an uncomposed grab shot, this larger image size is extremely valuable. Then, too, as mentioned above, there are psychological pitfalls—the temptation to overshoot and to use available-light techniques where flash would produce better results.

But the most interesting thing I discovered when I asked *Journal* men about the future of 4x5 is that they are keenly aware of the importance of the view camera's adjustable tilts and swings. The consensus was not that the 4x5 would be totally replaced, but that it would have less of a role in spot-news coverage and resume its traditional role as the camera for carefully composing on the groundglass, with front and back adjustments for perspective and depth of field.

With its rapid-action film transport, large negative capacity, fast-focusing coupled rangefinders, and wide assortment of high-speed interchangeable lenses, the future of the 35-mm as a press camera seems assured.—

NEW BOOKS

THE ROLLEI MANUAL, by Alec Pearlman, FIBP, FRPS, FPSA. Published by The Fountain Press, London. Distributed by Rayelle, 5700 Oxford St., Philadelphia 31. Cloth bound, illustrated, 382 pages, $7.95.

With this second revised edition, what is probably the largest and most comprehensive manual of Rolleiflex and Rolleicord photography is brought up to date, or very nearly so. Mr. Pearlman was crossed up by Messrs. Franke and Heidecke, who several months ago released their newest model, the Rolleiflex model 2.8D, apparently without consulting the author.

This, it must be said, is an act of base ingratitude when one considers the contribution to Rollei photography in particular, and 2¼x2¼ twin-lens-reflex photography in general, made by this exhaustive work. Mr. Pearlman explores every aspect of this popular camera from its evolution to the final processing of negatives and exhibition of color transparencies.

The book suffers chiefly from a pedestrian prose style and an extremely conservative outlook toward both technical and esthetic ideas and values. The illustrations with a very few exceptions, are certainly below par for a camera of such universal acceptance, and much of the technical data supplied in relation to materials and equipment is of value chiefly to European photographers. Understandably, the author has been unable to include the tremendous changes which have occurred in American black-and-white and color films during this past year, and most of this information is obsolete. However, despite these defects the book is a useful reference work for anyone interested in twin-lens-reflex photography.—*B.S.*

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•

Miniature camera users will find the new Paterson triple developing tank useful for it is designed to develop three 35-mm roll films at the same time. It has three transparent self-loading spirals which lock together to form a single column, but one,

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•

City Sales & Exchange offers a series of 8- or 16-mm Kodachrome films titled "This Is London." Reel one includes views of Tower Bridge, the ancient Tower of London, the picturesque Yeoman of the Guard, and the Crown Jewels in their care. It also shows St. Paul's Cathedral, Trafalgar Square, Whitehall, and many other well-known landmarks.
Kodachrome prices are, 16-mm, 100 ft, $20; 8-mm, 50 ft, $10; black-and-white, 16-mm, 10 ft, $5; 8-mm, 50 ft, $3 (duty negligible).
Write City Sale & Exchange Limited, 63/66 Cheapside London E.C. 2.

•

An effective viewer for 2¼-square transparencies is the "Hunter" illuminated, battery-operated viewer. Attractively finished in gray hammered steel with an excellent lens, it is equipped with a carrying handle which serves as a support when standing the viewer on a table. The "Hunter" has an on-off switch, and takes standard dry-cell batteries. It can be supplied by any dealer mentioned on this page for $9.10, incl. bulb, but without batteries (duty, about $2.65).

•

Your camera lens must be kept completely clean and dust free at all times in order to make clear sharp pictures, and only a tissue or special brush is suitable for that purpose. The Evers lens brush is made of soft-as-silk camel's hair in a metal-and-plastic container, into which it slides in and out like a lipstick. Finishes are red and gold or black and gold. Price is $1.05 (duty about 30 cents), from Burlington Cameras, 25 Burlington Arcade, Piccadilly, London.

Wallace Heaton Limited, 127 New Bond Street, London W.1., offers a very useful multi-purpose camera stand in component parts which can be assembled into a table tripod, copying stand, or camera clamp holder for use on table, chair, tree, fence, etc. It has a maximum column height of twenty-five inches, with a ball-and-socket head. The outfit packs into a fitted case at a price of $13 postpaid (duty about $1.50.) Heaton's Photographic Blue Book will be sent for three thirteen-cent International Reply Coupons.

•

Alec Pearlman FIBP, FRPS, FRSA, well known in the U. S. for his books "The Rollei Manual" and "The Rollei Handbook," has a photo store in Harrow, England. He has just perfected a color filter for cutting out ultraviolet light. The filter has a sharper cut than the "Skylight," giving much truer color rendering without any trace of blue cast, and has high transmission, so that no increase in exposure is needed. Each filter comes complete with a curve giving absorption and transmission data and is guaranteed optically flat to within 2 minutes of arc. Known as the "Bluecut" it can be had in 25, 28, 31, 33, 36, and 38-mm sizes for $2.20 (duty nominal) or with both surfaces hard coated $3.60 (duty nominal). Other sizes can be supplied to order. Write Alec Pearlman, 24 St. Ann's Road, Harrow, Middlesex.

•

City Sale & Exchange Limited, of 63/66 Cheapside, London E.C.2., can supply a new series of 2x2 color slides. The series contains an interesting set of English period houses dating back to the 14th century, a selection of Swiss, French, Austrian, and other famous Continental spots, also historical London views, views of South Devon, Cornwall, Oxford, Cambridge, Stratford-on-Avon, and Scotland. Price of each set is $2 (duty nominal). For lists write City Sale & Exchange.

•

The Corfield "Periflex" is a low-cost British-made 35-mm camera featuring a unique through-the-lens periscope focusing device. Pushing a small button on the camera body brings a small mirror into the image field, so you focus through the taking lens as with a single-lens reflex. The lenses are interchangeable and the thread used is the same as the Leica. The focal-plane shutter is made from tough rubberized fabric and has speeds from 1/30 to 1/1000 second and B. The "Periflex" is a precision-engineered job which boasts a number of luxury features at a low price. A. M. Davis, 8 Turnpike Parade, London N.15, will be pleased to send details. Camera body costs $48.80 (duty $13.52); the 50-mm f/3.5 lens is $27.50 (duty $7.68).

Here, our British Edition passes on word of new items offered in England. American readers now have the chance to buy directly from the mentioned source or through American distribution channels whenever established. U. S. Customs duties are approximated for each item (they're not charged on items costing less than $1). Duties do not apply to gifts sent to the U. S. which cost $10 or less.

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Contax IIA, f2 ctd. Sonnar	336.00	188.50	134.00
Contax IIIA, f1.5 Ctd. Sonnar	412.00	216.00	176.00
Contessa, ctd f2.8 RFMX			67.50
Edinex, ctd f2 Xenon	99.50	43.50	34.95
Graflex Ciro '35, f3.5	59.00	38.50	32.50
Kodak Signet, f3.5	75.00	48.00	36.50
Kodak Retina II, f2 CRF		61.00	49.50
Kodak Retina IIa, f2	149.50	104.95	85.00
Kodak Retina IIIc	190.00	136.50	110.00
Leica IIIF, f1.5 Summitar	358.00	228.00	170.00
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B&H 172A, f1.9 coated	199.95	133.50	115.50
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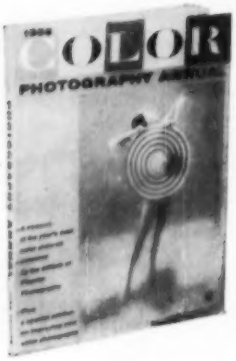

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(*Continued from page* 80)

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Shutter speeds and lens apertures appear on two very legible scales which share a common, diamond-design index. Both scales have click-stops for positive positioning, and the aperture scale's white numbers on a jet-black background provide maximum visibility.

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CAMERAS, STILL

6. (f) **Argus Photo Tip Portfolio: 5 Booklets on Flash, Filter Magic, Curtain Time, TV Pictures, Copying and Close-up. 25c. ARGUS CAMERAS, INC.**

8. (a) **Book: Complete reference book for amateur and beginner, "The Bolsey Guide," 128 pp., 70 illus., charts, tables, $1.95.** (b) Circular: Bolsey Precision Cameras, features new Jubilee Threesome, prices. BOLSEY CORPORATION OF AMERICA.

11. (a) Brochure: "Bino-Fotography." (b) Booklet: "How to Select Binoculars." D.P. BUSHNELL COMPANY.

18. (a) Brochure: List and prices of 400 items for Exakta cameras. (c) Brochure: Automatic Exakta VX; New booklet. EXAKTA CAMERA COMPANY.

23. (a) Booklet: For Prize Winning Pictures—**GRAFLEX,** Specifications, etc.

26. (a) Booklet: The Royal Robot; (b) Booklet: Robot Underwater Camera; (c) Booklet: Robot Accessories. (f) Brochure: Gives full details on new full-frame 1" x 1½" Robot Royal 36-power-drive camera as well as accessories. INTERCONTINENTAL MARKETING.

31. (c) Booklet: Hints on camera care and picture taking; also describes complete line of Konica cameras; accessories. 16 pp., illus. KONICA CAMERA CO.

34. (a) Booklet: Minolta "A"; Minolta 35, Model II and Rokkor lenses. (b) Booklet: Minolta Autocord and Minoltacord. FR CORPORATION.

38. (a) Catalog: Discusses each Polaroid Land Camera, accessories, gives hints and ideas for using 60-second pictures, illus. POLAROID CORPORATION.

39. (a) Brochure: Information on book titled "35mm Photography With A Praktiflex." (b) Brochure: New booklet on the Prakticon-Praktiflex FX. PRAKTICON COMPANY.

41. (a) Brochure: "Realist 35"; detailed facts on Model A & B, accessories. (b) Brochure: Commercial Applications of the Stereo-Realist, 4 pp., illus., plus 12 pp. of detailed information relating to modern selling. (c) Brochure: Realist 45, description, illus. REALIST, INC.

45. (a) Booklet: Omega 120; data, description. SIMMON BROTHERS.

52. (a) Booklet: "The Voigtlander Line"; complete details, description, illus. (b) Booklet: Complete detailed information of Hasselblad Camera, accessories, 26 pp., illus. (c) Hasselblad Super Wide Camera, details, description of camera, accessories; 32 pp., illus. (d) Folder: "Hasselblad 1000F", illus.; descriptive pamphlet of Hasselblad and accessories. (e) Folder: Illustrated and descriptive folder on Hasselblad Super Wide. WILLOUGHBY'S WHOLESALE.

53. (a) Brochure: "Edixa"; describes 35mm Edixa cameras, accessories, lists prices. WIRGIN BROS.

CAMERAS, MOTION PICTURE

7. (a) Brochure: The Auricon Cine-Voice; 16mm camera for professionals. (b) Brochure: Same as above, except for home movie makers. (c) Booklet: How to use your Cine-Voice, 16mm sound-on-film Recording Camera. (d) Catalog: 40 pp., illus., Auricon Cameras. BERNDT-BACH, INC.

12. (a) Brochure: "The Eumig 88"; description, details, lists accessories for this 8mm movie camera. CAMERA SPECIALTY.

26. (d) Brochure: Bauer 88 motion Picture Cameras; Descriptions and accessories; also details on Bauer 88B camera with built-in exposure meter. (e) Booklet: Bauer 8mm Cameras. Complete descriptive literature on the Bauer cameras as well as the story of Bauer plant in Germany. Material includes cameras, accessories and suggestions as to use of equipment. Illus. INTERCONTINENTAL MARKETING CORP.

30. (a) Booklet: 8mm full line covering all 8mm movie cameras and projectors. (b) Circular: 16mm full line covering all 16mm movie cameras and projectors. (d) **Book: Keystone Movie Scene Record Book; 15c.** KEYSTONE CAMERA COMPANY.

43. (a) Booklet: Cameras by Revere. REVERE CAMERA COMPANY.

63. (a) Catalog: Lists Wollensak Motion Picture Cameras, Projectors, Stereo Cameras and accessories, prices, descriptions. 12 pp., illus. WOLLENSAK OPTICAL.

MOTION PICTURE ACCESSORIES

29. (d) **Booklet: "Editing for Better Movies" by Leo Hefferman. Reg. 50c, Special 10c.** KALART COMPANY, INC.

37. (b) Magazine: "The Bolex Reporter," quarterly, available thru franchised Bolex dealers. PAILLARD PRODUCTS, INC.

42. (a) Brochure: RCA 400 Junior and Senior 16mm Sound Projectors; non-technical description of operating features. Illustrates sound equipment which may be combined with projectors in semi-permanent or permanent installations, 12 pp., illus. RADIO CORPORATION OF AMERICA.

43. (b) Booklet: Features and operation Curvamatic Splicer. (c) Booklet: Curvamatic Splicer, details, data. (g) Booklet: Motion Picture Equipment. REVERE CAMERA COMPANY.

LENSES

11. (c) Pamphlet: "Those Startling Fujinons"; discusses the new 50mm F1.2 and 35mm F2 lenses. D.P. BUSHNELL COMPANY.

15. (a) Chart: How to use Two Ednalite Portrait Lenses. (b) Brochure: Portrait Lens Instructions; tables, charts on +1, +2, +3 portrait lenses. (c) Reprints Ed N. Lite Column: informal, simple information on use of EdnaLite Filters. (d) Charts: EdnaLite Color Filter Selector—the correct EdnaLite to use under approximate lighting conditions of all kinds. (e) Filter Guides: Listing and describing all available EdnaLite Filters, filter factors. (f) Booklet: The EdnaLite Story—Complete story with photographs, telling and showing how EdnaLite Solid Optical Glass Filters are made, from raw glass to finished product. (g) Memo from Ed N. Lite—Complete with description of EdnaLite Filter Kits and Filter Factor Chart. (h) Leaflet: Facts and information on the Reversible Wide Angle/Telephoto EdnaLite Dual-Lens. EDNALITE OPTICAL COMPANY.

16. (a) Leaflet: "How To Use Enteco Polarizing Screens and Enteco Polarizing Filters with Still and Movie Cameras." (b) Leaflet: New Enteco data and information charts on close-up photography with supplementary lenses. (c) Leaflet: Revised edition of Enteco "Filter Information," handy filter factor and film speed chart, filter types. ENTECO INDUSTRIES.

17. (a) **Booklet: "Take A Tip From Hollywood," describes Elgeet lenses, instructions on home movies, etc., 36 pp., illus.; 10c. ELGEET OPTICAL COMPANY.**

18. (b) Brochure: Steinheil lenses, wide angle, telephoto and movie lenses. (c) Brochure: Angenieux Lenses, complete information on construction, angles of view, relative magnification, range, focal length. (d) **Catalog: "Equipment Information from Exakta," lists latest lenses recommended for the Exakta Camera, 28 pp., illus. 10c.** EXAKTA CAMERA COMPANY.

28. (b) Folder: How to Use Your Elitar Soligor Lens, descriptive information on Telephoto, Wide Angle, prices. INTERSTATE PHOTO SUPPLY.

31. (b) Chart: Shows test of Hexanon 50mm F/2.8 lens as used in the Konica II. KONICA CAMERA COMPANY.

52. (f) Booklet: "Zeiss Lenses For The Hasselblad Camera," detailed information and discussion of Zeiss lenses for the Hasselblad; 10pp. illus. WILLOUGHBY'S WHOLESALE.

54. (a) Booklet: Raptar 8mm cine lenses. (b) Booklet: Raptar 16mm cine; depth of field projection charts. (c) Booklet: "How to Have More Fun With Your Camera." WOLLENSAK.

61. (a) Circular: Slip-On Filters. (b) Circular: Hi-Trans Filters. (c) Circular: Auxiliary Close-up Lenses for all movie and still cameras. (d) Circular: Photar Filters. (e) Circular: Tiffen-Polaroid Light-Polarizing Filter. TIFFEN MARKETING CO.

PROJECTORS, SLIDE

5. (a) Booklet: How To Select A Slide Projector. AMERICAN OPTICAL.

21. (c) Folder: Describes Skan automatic "slide-cooling" projector, illus. G-M LABORATORIES, INC.

44. (a) Brochure: A complete listing of all regular View-Master Reels and Packets, including product prices. (b) Brochure: Stereo Today, a complete coverage of the View-Master Stereo System, information on products in this system. SAWYER'S, INC.

48. (a) Leaflet: Engineered projection equipment; data, details. VIEWLEX.

65. (a) Booklet: "How to Show Your Slides Without Losing Your Friends"; step by step procedure for building a slide program instead of a series of individual pictures. LA BELLE INDUSTRIES.

FLASH EQUIPMENT

1. (a) Booklet: Various styles of lighting equipment for still pictures, indoor movies and 3-D shots. (b) Folder: Describes use of multiple floodlamp control box, gives electrical facts affecting use of flood and flash lamps; 6pp. (c) Catalog: Photoflood Lighting, highly descriptive and illustrated 16-page booklet of lighting equipment for amateur and professional photographer. Includes lighting tips on indoor still and movie pictures with diagrams, charts, etc. ACME-LITE MFG. CO.

4. (a) Booklet: "How To Take Professional Flash Pictures With Your My-T-Myte Flashbulbs." 8pp., illus. AMPLEX.

13. (a) Booklet: "Light Makes the Picture, Synctron Takes It Better." (b) Booklet: Current technical data on Synctron models. (c) Catalog: Includes accessories, technical information, prices, individual specification sheet for each model. (d) Folder: "55 Quick Facts on Dry Battery and Dynascal Power." DORMITZER ELECTRIC COMPANY.

22. (a) Folder: "Triangle Lighting" formula for taking indoor pix with light. (b) Booklet: Photoflash Tips. (c) Bright Ideas-flash pix of parties, kids, adults. (d) Photolamp Data—lighting, exposure, film speed for flash, flood, other lamps. (g) Booklet: The M-2 Bulbs; data information on the "tiny" bulbs. GENERAL ELECTRIC.

23. (b) Folder: Graflite. (c) Folder: Stroboflash. GRAFLEX.

24. (a) Booklet: "Strobonar Units," 16pp, illus. (b) Booklet: "Synchro-Mite," 8pp, illus., flash units. (c) Booklet: Professional Flash Synchronizers; including solenoids, reflectors, battery cases; 16pp, illus. (d) Booklet: "Synchro Units"; 8pp., illus. (e) Folders: 1. Fotoeye; 2. Koiled Kord; 3. Strobonar Six; 4. Strobonar Seven. HEILAND.

34. (c) Booklet: Minolta Jr. B-C Flash Gun. FR CORPORATION.

25. (a) Folder: Sun-Lite II; description and illus. on speedflash. (b) Folder: Sun-Lite 500, description and information, 6pp, illus. (c) Folder: Flash Saver, description, 4 pp. (d) **Manual: Sun-Lite II instruction booklet, detailed information on Sun-Lite II Portable Speed Flash, all 3 models; 20 pp., illus.; 25c.** HERSHEY MFG. COMPANY.

28. (a) Folder: Describes 3 models of electronic flash, Expert IV, Matador, Reporter I, prices. INTERSTATE PHOTO SUPPLY.

29. (c) Folders: Kalart Flash Equipment, BC-400 and Kalart Super Speed Flash. (e) How B. C. by Hy Schwartz. KALART COMPANY, INC.

35. (a) Booklet: Eveready Battery Engineering Bulletin on flash photography, 12pp. illus.; issued periodically. (b) Eveready Batteries, data, helpful information "B," "B-C" batteries. NATIONAL CARBON COMPANY.

36. (a) Leaflets: Technical information and data on use of the Megalume electronic flash. (b) Pamphlet; "Reciprocity Failure and the Determination of Exposure With Some Electronic Flash Equipment." NEMS-CLARKE, INC.

46. (a) Brochure: Listing of lighting equipment for semi-professional or advanced amateur. (b) Brochure: Complete listing of lighting equipment for the amateur and movie maker. (c) Booklet: "Indoor Photos Made Easy," how to do indoor lighting, 10pp, illus. SMITH-VICTOR CORPORATION.

47. (a) Folder: "Flash is Easy—Flash is Fun"; complete flash instruction for advanced, amateur, beginner. (b) Booklet: How to Take Better Pictures and Have More Fun With Flash; 32pp. illus. (c) Booklet: Color Flash with Box Cameras. (d) Booklet: How to Throw a Snapshot Party; 24pp, illus. (e) Card: Wallet Size, gives correct F-stops. (f) Brochure: Basic Lighting Placement, illus. (g) Specification Sheets: 1. Blue Dot Line; 2. Projection Lamps; 3. Darkroom and Enlarger Lamps; 4. Super-floods. SYLVANIA ELECTRIC.

8. (c) Exposure Guide: Pocket size, gives correct F-stops. BOLSEY CORPORATION OF AMERICA.

50. (b) Brochure: The ABC of Flash Photography; guide to how, when, why to use flash bulbs. (c) Brochure: Your guide to better pictures thru better lighting; comprehensive discussion of Westinghouse bulbs.

55. (a) Booklet: Descriptive data and information on Limelite "60"; 14pp., illus. (b) Folder: Describes Limelite Electronic Flash; 4pp, illus. LIMELITE CORPORATION.

57. (a) Brochure: 6pp., Mallory B-C Cartridges photo flash item; complete cross-reference unit to flash attachment; 50 units; Mallory B-C Mercury Cartridges. (b) Leaflet: Complete explanation of application of Mercury for foto-flash. P.R. MALLORY & CO.

62. (a) Booklet: Electronic Flash. (b) Booklet: Brighter Way to Better Pictures, 16pp. FR CORPORATION.

PROCESSING EQUIPMENT AND MATERIALS

10. (a) Brochure: Illustrating design and function of Model 45M Enlarger, 24pp. (b) Leaflet: Additional uses of Model 45M Enlarger. (c) Pamphlet: Discusses characteristics and operation of Model 57MB. (d) Book: A Brief 73 Year History of Enlarger Design. 32pp. CHARLES BESELER COMPANY.

19. (a) Booklet: "How to Buy an Enlarger." FEDERAL MANUFACTURING AND ENGINEERING CORP.

27. (a) Leaflet: Time-O-Lite Printer. (b) Leaflet: Time-O-Lite Meters and Switches. INDUSTRIAL TIMER.

33. (a) **Booklet: "Marshall's Guide for Hand-Coloring Photographs," special section on heavy oils, 36 pp., illus. 25c.** (b) **Pamphlet: Color Chart; Marshall's photo-oil colors, price list of sets, accessories, 10c.** (c) Pamphlet: Make Life More Colorful, discusses photo-coloring; (d) Pamphlet: Information on the photo-oil pencil. JOHN G. MARSHALL MANUFACTURING CO.

45. (b) Catalogs: Omega A-2, B-7, B-8, D-2, D-3, E-5; (One on each model, specify which you want.) (c) Booklet: How To Buy The Right Enlarger. (d) Booklet: Omega Distortion Correction Attachment. SIMMON BROTHERS.

56. (a) Folder: Describes "Static Master," gives uses and prices, 3pp, illus. NUCLEAR PRODUCTS.

58. (a) Brochure: Discusses Lisco Cut Film Holder; gives data and information on exclusive features. LISCO PRODUCTS.

60. (a) Booklet: Clayton P-60 Fine Grain Developer; detailed instruction on use; 16pp, illus. CLAYTON CHEMICAL CORP.

64. (a) Booklet: Describes methods and materials for mounting transparencies for viewing and projecting. ERIE SCIENTIFIC CORP.

62. (c) Booklet: Cut Film Pack Developing Tank. (d) Booklet: Developing Tank. (e) Booklet: Proven Liquid Chemicals. (f) Booklet: You'll Enjoy Developing & Printing. (g) Booklet: Big Picture Fun for Everyone (Enlarger). (h) Booklet: Home Developing & Printing Kit. (i) Booklet: Developing & Enlarging; FR CORPORATION.

68. (a) Catalog and Handbook: 18 pages, illustrated, Nega-File slide-cabinets, accessories. NEGA-FILE COMPANY.

EXPOSURE METERS

20. (a) Booklet: Catalog sheet and booklet describes original direct-reading, photo-electric exposure meter, reading directly in f/stops, with film speed charts. (b) Brochure: "Ideal Rangefinder," instructions for calibrating rangefinders. (c) Brochure: Catalog sheets, golf club selector guide, information on Long-Range Rangefinder and its uses. FEDERAL INSTRUMENT CORP.

21. (a) Circular: Describes the Skan Quick Meter, price, information. (b) Booklet: Technical data, information on use and care of Skan Meters, helpful hints, 24pp, illus. G-M LABORATORIES, INC.

22. (e) Leaflet: GE Exposure Meters, significant features which adopt one of three GE meters to specific requirements. (f) Booklet: Color Control Meter and Variable Color Filter; how to achieve full control of color. GENERAL ELECTRIC.

51. (c) Booklet: Help in Selecting the Right Exposure Meter. 15pp., illus. Describes and discusses the workings of a meter. WESTON ELECTRICAL INSTRUMENT CORP.

PICTURE TAKING ACCESSORIES

40. (a) Booklet: "New Super Quick-Set Universal Photographic Support," illustrates and describes new system for handling cameras and related accessories, 12pp. (b) Folder: "Whitehall Tripods." 6pp. illus. QUICK-SET, INC.

59. (a) Catalog: 12pp., illus.—describes all types of camera bags and leather goods of use to the photographer, lists prices. J. B. PERRIN CO.

67. (a) Catalogue: 10 pages describing the complete list of products. TEST-RITE INSTRUMENT CO.

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3. (a) Booklet: Ilford Flat Films, 12pp, illus.: information and technical data. (b) Brochure: Ilford Roll Films, data and description; 6pp. (c) Circular: Ilford Microphen Developer, how to use it, and what it does. ALCO PHOTO SUPPLY.

43. (d) Booklet: Features and instructions on uses of Diaversal Enlarging Paper. REVERE CAMERA CO.

62. (j) Booklet: Special Adjustable Roll Film; FR CORPORATION.

VIEWERS

2. (a) Booklet: Describes in detail features of Admiral Slide-Light Viewer; 8pp. ADMIRAL PHOTO PRODUCTS.

66. (a) Brochure: 4pp, illus., data, details, 35mm Opta-Vue hand viewer. OPTICS MANUFACTURING COMPANY.

62. (k) Booklet: Your Port-A-View; FR CORPORATION.

SLIDES, STEREO

43. (e) Booklet: Features of Shield 'N Vue Slide Projectors. REVERE CAMERA CO.

TAPE RECORDERS

43. (f) Booklet: Features of hi-fi "Balanced Tone" Tape Recorders. REVERE CAMERA COMPANY.

19. (b) Circular: Model 37C; Model 47A; description, data. FEDERAL MANUFACTURING & ENGINEERING CORP.

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46c	47a	47b	47c	47d	47e	47f	47g	48a	49b	50b	50c	51c
52a	52b	52c	52d	52e	52f	53a	54a	54b	54c	55a	55b	56a
57a	57b	58a	59a	60a	61a	61b	61c	61d	61e	62a	62b	62c
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is that we wish that the outer surface of the focusing flange were also knurled so that should it seem desirable one can focus by turning the flange itself.

The shutter-release button is conventionally placed on the top right-hand side of the camera and is extremely smooth and gives a crisp release which helps hold the camera steadily when very slow exposures are given.

Film advance and shutter resetting are, as we have stated, accomplished by means of the straight-down finger lever located on the left-hand side of the camera. Two short strokes turn the trick with near-machine-gun rapidity.

Quality is evident throughout this camera, especially in areas of design which are frequently overlooked in cameras of the Konica's price level. Very significant, in our view, is the excellent internal baffle system which reduces the danger of stray light bouncing about within the camera, and the rewind button which once pushed, remains depressed until the advance trigger is activated. This prevents the possibility of tearing sprocket holes while rewinding by releasing tension on the rewind button. The Konica III, incidentally, incorporates a folding crank for high-speed rewinding, and the camera can be cleared in less than 30 seconds.

In actual operation, the Konica III proved an able performer. Its six-element 48-mm Hexanon *f*/2 lens is extremely sharp, and the between-the-lens shutter is smooth and accurate. Parallax warning marks in the viewfinder field warn against both horizontal and vertical parallax, and short-distance tests indicate that at 3½ feet they allow a comfortable margin for error. The viewfinder itself is big, bright, and clear. Under some conditions, when the light was very dim and flat, as well as when we shot directly into a light. parts of the frame-lines tended to disappear. However, inasmuch as the same phenomenon is noted in some cameras costing approximately three times as much as the Konica III, this can not really be considered a black mark against it. The rangefinder image itself—a standard-sized rectangle in the middle of the viewfinder—is bright and contrasty, with a very slightly greenish cast to it. We found this rangefinder capable of passing our standard rangefinder contrast and brightness test: being able to focus in a darkroom lighted only by the amber printing safelights.

The camera handles easily and well. Its high quality and many valuable features should make it a favorite of those to whom lens interchangeability is not an important consideration. This quality and these features should also make the Konica III a popular choice among the users of top-bracket focal-plane-shutter miniatures as a second camera for electronic flash, the between-the-lens shutter permitting synchronization at speeds to 1/500 sec.

Studying, testing, and working with the Konica III gave this reporter the feeling that its designers had worked very hard to produce a high-quality instrument that withstands comparison with any other cameras produced today. Inside and out, they've succeeded magnificently.—

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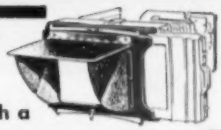

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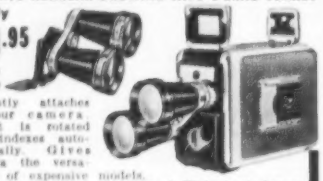

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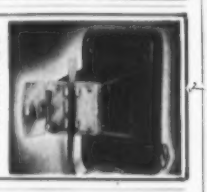

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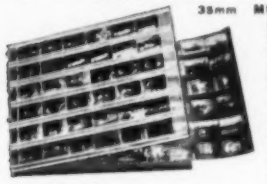

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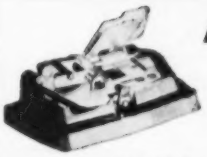

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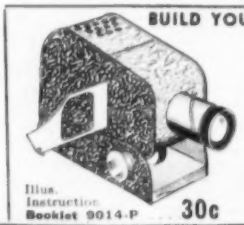

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This is fine quality, American made instrument—war surplus! Actually 1/2 of U.S. Govt. 7 x 50 Binocular. Used for general observation both day and night and to take fascinating telephoto shots with your camera. Brand new. $95 value. Due to Japanese competition we close these out at a bargain price.

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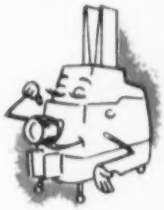
Other models priced from $39.95 to $154.95 Incl. F.E.T.

Magazine Carrying Cases optional

The "Boys in the Back Room" tell me you're the greatest slide projector buy in the shop! How come, Beautiful?



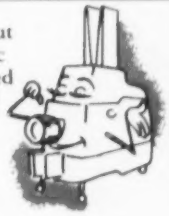
Well . . . no other projector costs so little to operate. I'm the only popular projector in the world that can hold not only 36 . . . or 40 . . . but up to 150 slides in a single magazine!

And that's why . . . ?

And that's just *one* reason why I offer more pleasure. My pictures are brighter—I'm easier to use, AND . . . I can save my owner plenty of money. With practically any other projector, you've got to buy at least *four* magazines to hold as many slides as my *one* magazine! Get it?

Got it! Tell me more – my aperture is wide open.

Well, I've got touch system, too. I'll feed, project, change and restack slides with just a single touch! AND . . . all in a split-second with no slide-wipe or glare!



AND, forgive me for bragging, but . . . I've got 300 watts of electronic sunshine, a coated, color-corrected 5" f/3.5 lens, and a slim, beautiful two-tone body. Get around? Easy! I'm made of aluminum—weigh only 7½ lbs.

Lady Director, I take my lens cap off to you. You'd make any 35mm camera proud to load its slides in your magazine.

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Calendar for your new Retina

First Day . . . You've just bought a Kodak Retina IIIc Camera and can't put it down. So, you spend the rest of the day enjoying the feel of its fine craftsmanship and trying out the controls. You listen to the easy buzz of the shutter at 1 second, its quick snick at 1/500. You try to outwit the light-value, diaphragm-shutter coupled exposure system. You guess the exposure and then check your guess against the built-in light meter. You put the rangefinder through its paces, from 2½ feet to away out yonder. You take your time getting acquainted—there's a wonderful lot to this camera. But soon your Retina seems like an old friend, a friend you've known for years.

First Week . . . You pick up your Retina IIIc and go out picture making every chance you get. This is a camera that never sits still very long. You try some fast sequence shots—a flick of your thumb moves the film and cocks the shutter. You shoot in practically no light at all with lens opened to its full *f*/2. You shift shutter speeds—the diaphragm automatically compensates. You have a wonderful time and get wonderful 35mm black-and-white negatives and color transparencies. You appreciate your Retina more every day.

First Month . . . Now you know your Retina IIIc, know what it can do. Your horizons begin to grow—you begin to plan the directions in which you'll expand. Perhaps you add auxiliary lenses, the 35mm wide-angle or 80mm telephoto, with matching sports and optical finders. Or, you broaden your Retina's scope with the focal-frame close-up attachments. Or, if your interest lies in scientific photography, the microscope adapter. Wherever your photographic ambitions take you, your Kodak Retina IIIc Camera will be there to serve you well. Start your first day with it today.

The Kodak Retina IIIc Camera with Retina-Xenon C 50mm f/2 Lens, $190. The Retina IIc with f/2.8 Lens, without exposure meter, $139.50. Most Kodak dealers offer small down payments and convenient terms. (Prices include Federal Tax and are subject to change without notice.)

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